

STROKE
A CASE STUDY

STROKE SERIES, VOLUME 1
IDENTIFYING STROKES



Sally is having a conversation with her neighbor Ann. Ann suddenly notices Sally's speech is becoming garbled. Sally is 56 years old and has been complaining of intense headaches over the last week. Ann took fast action and called 911. An ambulance arrived shortly afterwards and transported Sally to the Emergency Room nearby.





**RED
ALERT!**

The subject matter is intended to share over 3 decades of **CLINICAL EXPERIENCE** with new nurses and those who need experience in a particular area. It is by no means intended as a substitute for your Institution's Policies and Procedures. Follow your doctor's orders .

This is a step by step approach which is full of humor and meant to make learning enjoyable.

LEARNING OBJECTIVES



occipital
lobe -
responsible for
vision

- 1) IDENTIFY THE LOBES OF THE BRAIN
- 2) DISCUSS STROKES AND TREATMENT
- 3) CSF AND ITS PRODUCTION
- 4) AN OVERVIEW OF ICP MONITORING

IF YOUR PATIENT HAD A STROKE, WOULD YOU KNOW WHAT TO LOOK FOR?

DIFFICULTY WITH MOTOR ACTIVITY,
BLADDER CONTROL,
SOCIAL BEHAVIOUR
AND PERSONALITY

**frontal
lobe**

**parietal
lobe**

DIFFICULTY WITH
READING, WRITING,
MATH CALCULATION,
DISTINGUISHING
RIGHT FROM LEFT

**Broca's
area**

SPEECH PRODUCTION-
DIFFICULTY EXPRESSING
WORDS

**occipital
lobe**

VISUAL
DISTURBANCES

**temporal
lobe**

DIFFICULTY WITH
MEMORY, HEARING
AND SPOKEN
LANGUAGE

pons

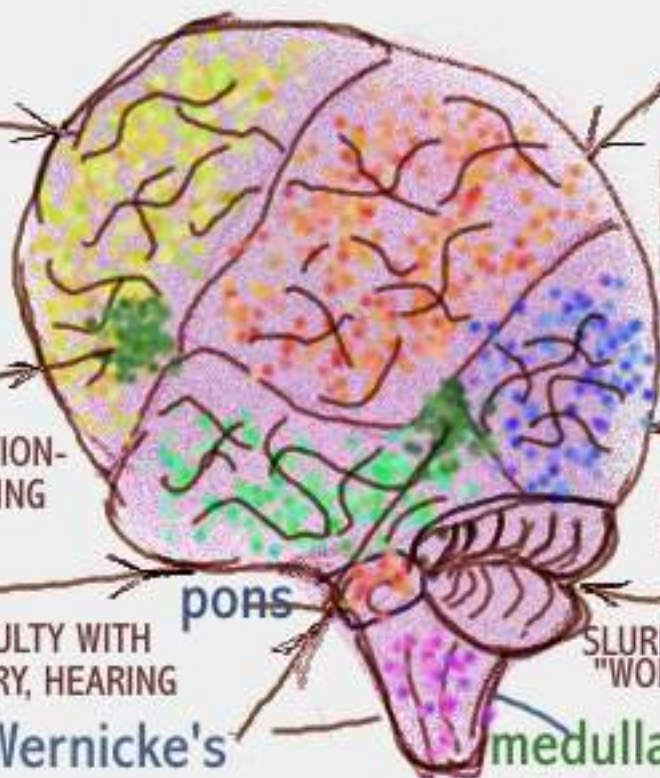
cerebellum

SLURRED SPEECH,
"WOBBLY" WALK,
SHAKY HANDS

**Wernicke's
area**

SPEECH
COMPREHENSION-
DIFFICULTY UNDERSTANDING
WHEN SPOKEN TO

**medulla
oblongata**



IDENTIFYING STROKE



STROKE OR " BRAIN ATTACK" HAS BEEN ON THE INCREASE, RESULTING IN DEATH AND DISABILITY. STROKE MAY BE EMBOLIC (CAUSED BY A CLOT) , OR HEMORRHAGIC (BLEEDING).

TREATMENT OF HEMORRHAGIC STROKE IS DIRECTED AT CONTROLLING BLOOD PRESSURE WITH ANTIHYPERTENSIVES AND DECREASING PRESSURE IN THE BRAIN.

TPA (TISSUE PLASMA ACTIVATOR) ,A "CLOT BUSTER" IS THE TREATMENT OF CHOICE FOR EMBOLIC STROKE.

REGARDLESS OF THE CAUSE, QUICK INTERVENTION AND GOOD MANAGEMENT IS NECESSARY.

ICU CARE IS USUALLY NECESSARY.

STROKE A CASE STUDY



Sally is having a conversation with her neighbor Ann. Ann suddenly notices Sally's speech is becoming garbled. Sally is 56 years old and has been complaining of intense headaches over the last week. Ann took fast action and called 911. An ambulance arrived shortly afterwards and transported Sally to the Emergency Room nearby.

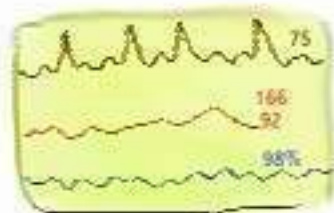


SALLY WAS TRANSPORTED TO THE ER, WHERE SHE WAS EXAMINED BY THE DOCTOR. A CT SCAN OF HER HEAD WAS ORDERED. HER SPEECH WAS FOUND TO BE GARBLED AND HER RIGHT ARM WAS WEAKER THAN THE LEFT.

Sally I am going to order a CT scan to find out more

RIGHT ARM IS WEAKER THAN LEFT

PULSE OXIMETER ON FINGER - USED TO MEASURE THE OXYGEN SATURATION IN THE BLOOD.



OXYGEN GIVEN TO IMPROVE OXYGEN SATURATION IN THE BLOOD



EKG - DONE TO EVALUATE ANY CARDIAC CHANGES



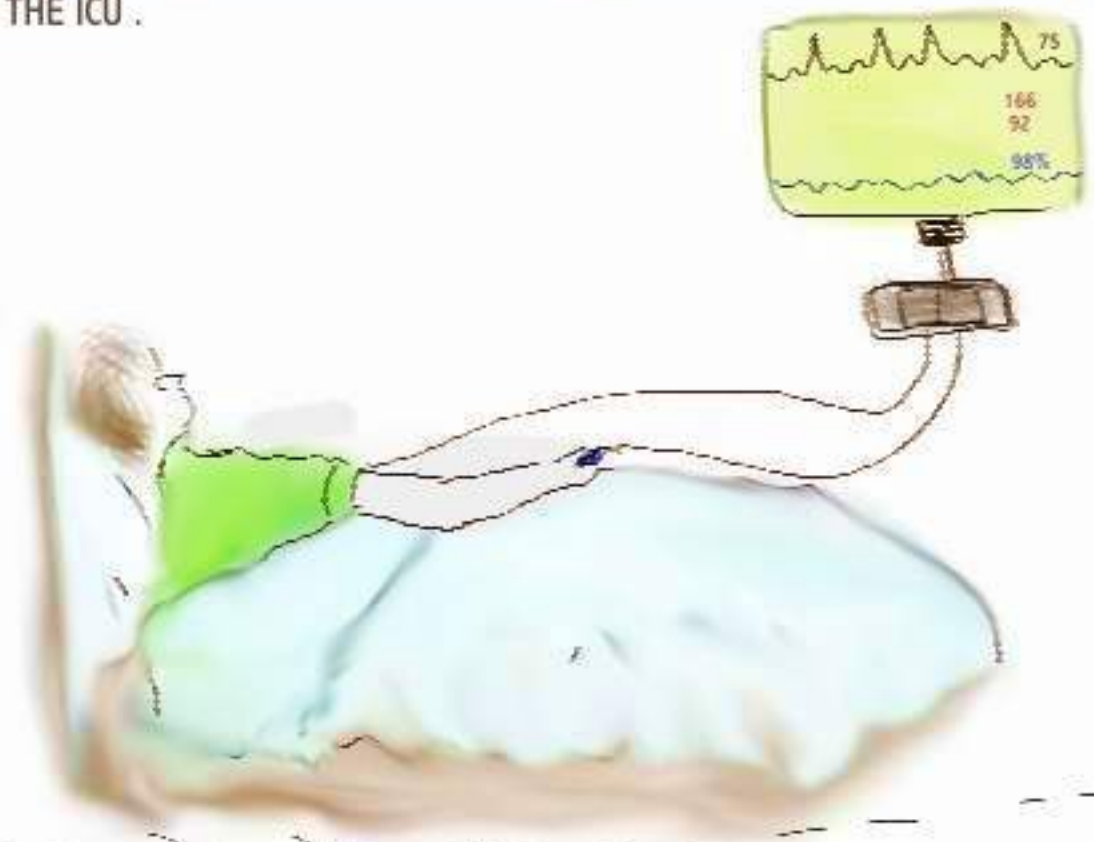
BLOOD SAMPLES TO EVALUATE BLOOD COUNT, CLOTTING AND ELECTROLYTES



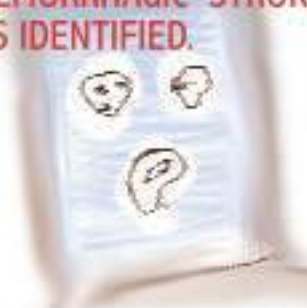
BLOOD SAMPLE FOR ARTERIAL BLOOD GAS - TO EVALUATE OXYGENATION



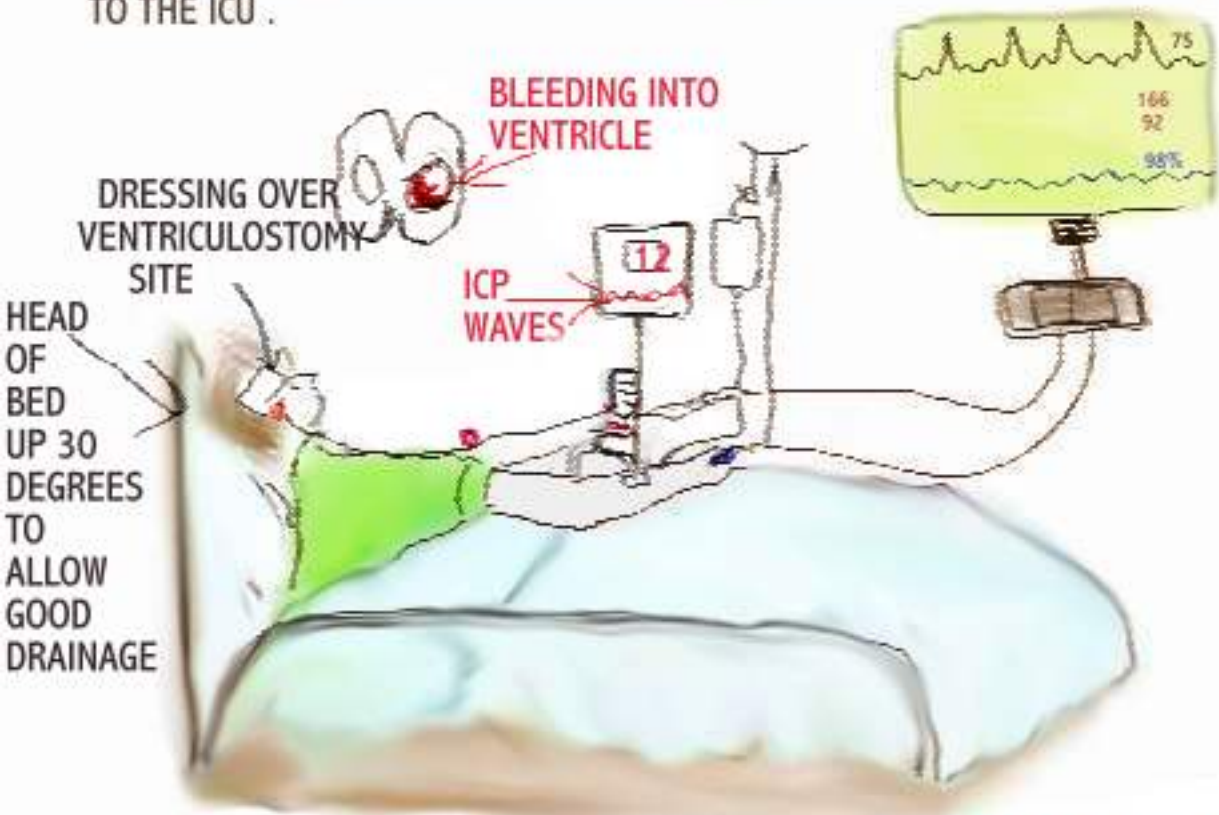
SALLY HAD A CT SCAN OF HER HEAD DONE. SHE WAS THEN TRANSFERRED TO THE ICU .



CT SCAN OF HEAD DONE - BLEEDING INTO BRAIN (HEMORRHAGIC STROKE) WAS IDENTIFIED.



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HEAD OF BED UP 30 DEGREES TO ALLOW GOOD DRAINAGE

CT SCAN OF HEAD DONE - BLEEDING INTO BRAIN (HEMORRHAGIC STROKE) WAS IDENTIFIED.



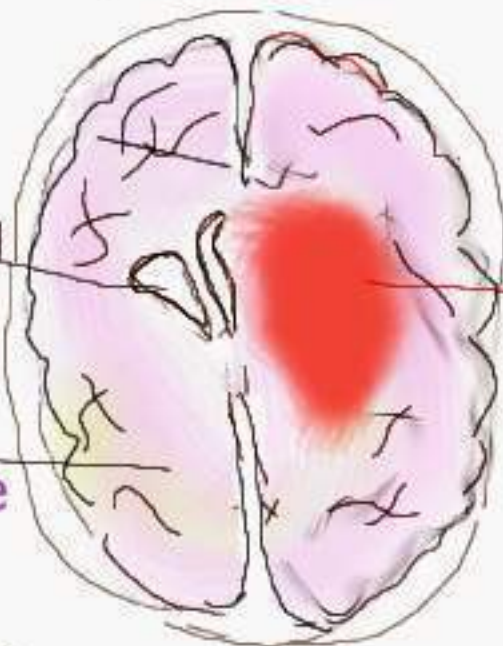
SALLY HAD A CATHETER PLACED IN HER VENTRICLE (VENTRICULOSTOMY) AND CONNECTED TO ICP MONITORING . INTRACRANIAL PRESSURE (ICP) MONITORING IS DONE TO MONITOR AND TREAT BRAIN PRESSURES WHEN NECESSARY.

HEMORRHAGIC STROKE

shape of ventricles distorted from bleeding

cerebral hemisphere

brain hemorrhage



Hemorrhagic stroke - results when an artery ruptures.

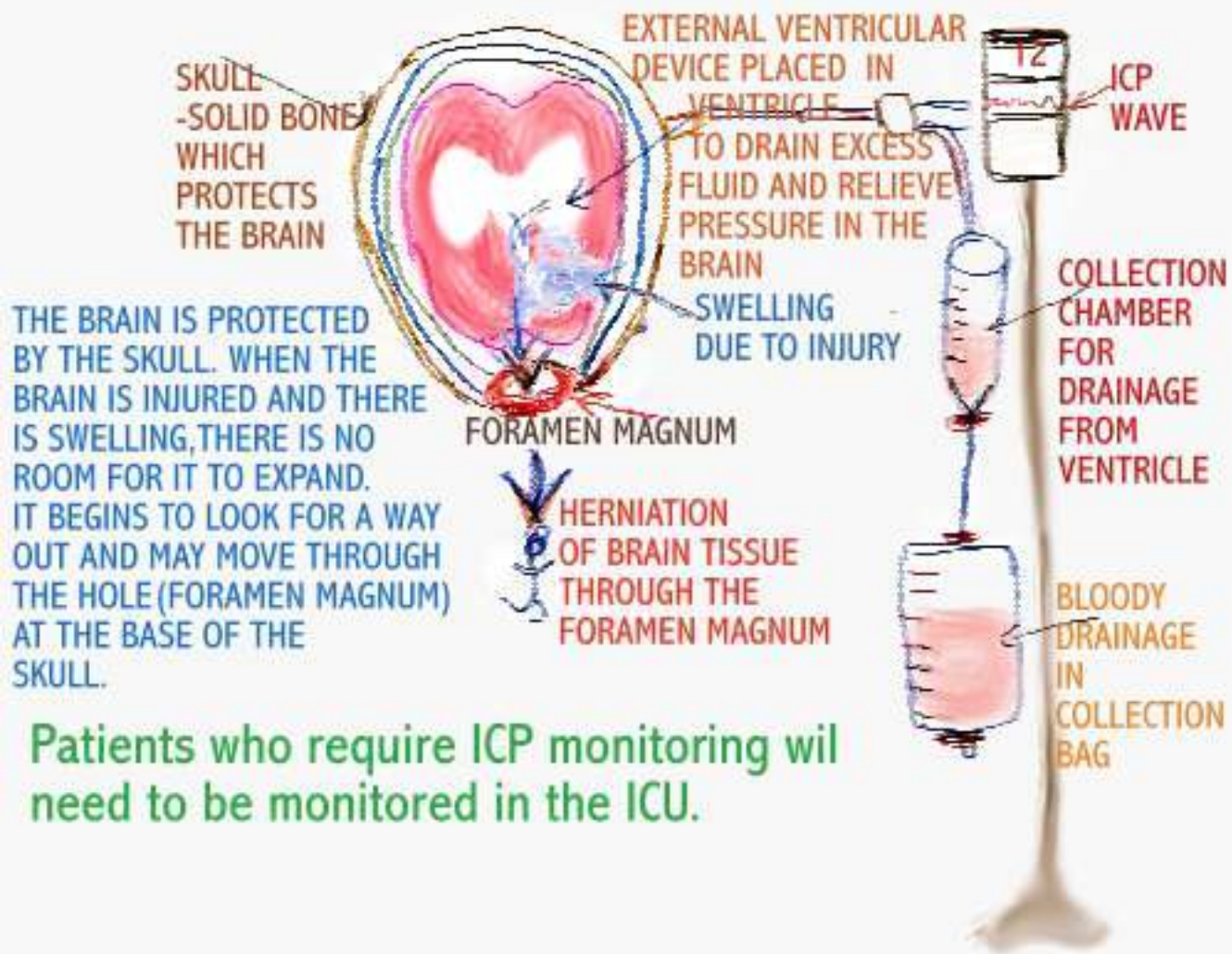




Bulging artery
due to high
blood
pressure

TREATMENT OF HEMORRHAGIC STROKE IS DIRECTED AT DECREASING ELEVATED BLOOD PRESSURE AND FOLLOWING DOCTOR'S INSTRUCTIONS FOR BLOOD PRESSURE CONTROL. PAIN MEDS AND DRUGS LIKE MANNITOL ARE ALSO USED TO DECREASE ANY RISE IN INTACRANIAL PRESSURE (ICP).

The main cause of hemorrhagic stroke is high blood pressure.



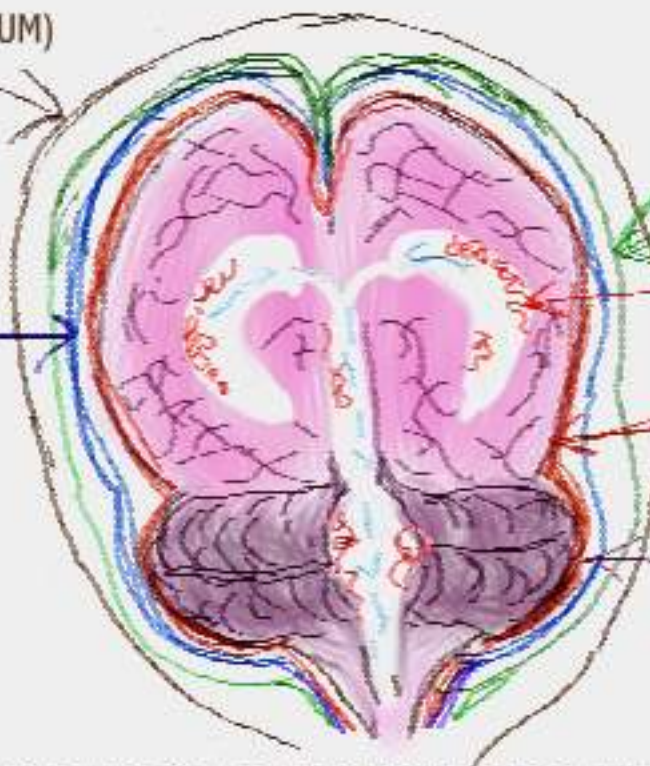
Patients who require ICP monitoring will need to be monitored in the ICU.

ICP MONITORING WILL BE DISCUSSED IN DETAIL IN A LATER CHAPTER.

THE VENTRICULAR SYSTEM AND CSF PRODUCTION

THE SKULL (CRANIUM)
IS A BONY
STRUCTURE
WHICH PROTECTS
THE BRAIN.

ARACHNOID
MATER




DURA MATER

CHOROID PLEXUS-
CSF IS PRODUCED IN
THE CHOROID PLEXUS

PIA MATER

CEREBELLUM

THE BRAIN IS PROTECTED BY A BONY STRUCTURE (CRANIUM) . THERE ARE THREE PROTECTIVE COVERINGS UNDER THE CRANIUM :- DURA MATER, ARACHNOID MATER AND PIA MATER. BENEATH THE ARACHNOID MATER IS A SPACE CALLED THE SUB-ARACHNOID SPACE. THERE ARE HOLLOW SPACES INSIDE THE BRAIN CALLED VENTRICLES. A TOTAL OF 4 VENTRICLES ARE USUALLY FOUND IN EACH BRAIN. CEREBROSPINAL FLUID (CSF) IS PRODUCED IN THE VENTRICLES BY VASCULAR CELLS CALLED CHOROID PLEXUS. CSF FLOWS WITHOUT OBSTRUCTION AROUND THE BRAIN AND SPINAL CORD. TYPICALLY, 150MLS. OF CSF FLOWS AT ANY TIME AND APPROX. 500MLS. IS PRODUCED DAILY. CSF IS CLEAR AND ACTS AS A BUFFER.

A woman with dark hair, wearing a grey long-sleeved shirt, is sitting on a bed with a yellow blanket. She is looking towards the right. A speech bubble originates from her mouth, containing text. To her right is a simple line drawing of a bedside table with two drawers.

Nurse I am not sure what is going on. My right arm feels weak and my right eye is cloudy.

THIS PATIENT IS DISPLAYING STROKE SYMPTOMS.

SYMPTOMS INCLUDE:

- SUDDEN SEVERE HEADACHE, MENTAL CONFUSION
- NAUSEA, VOMITING
- VISUAL DISTURBANCES, FACIAL WEAKNESS, HEARING LOSS
- WEAKNESS OF EITHER UPPER OR LOWER EXTREMITIES OR LOSS OF COORDINATION



ISCHEMIC STROKE - results when the flow of blood to the brain is interrupted by a thrombus, coagulation states, atrial fibrillation, atherosclerotic disease or an embolus.

blood clot from the heart due to atrial fibrillation

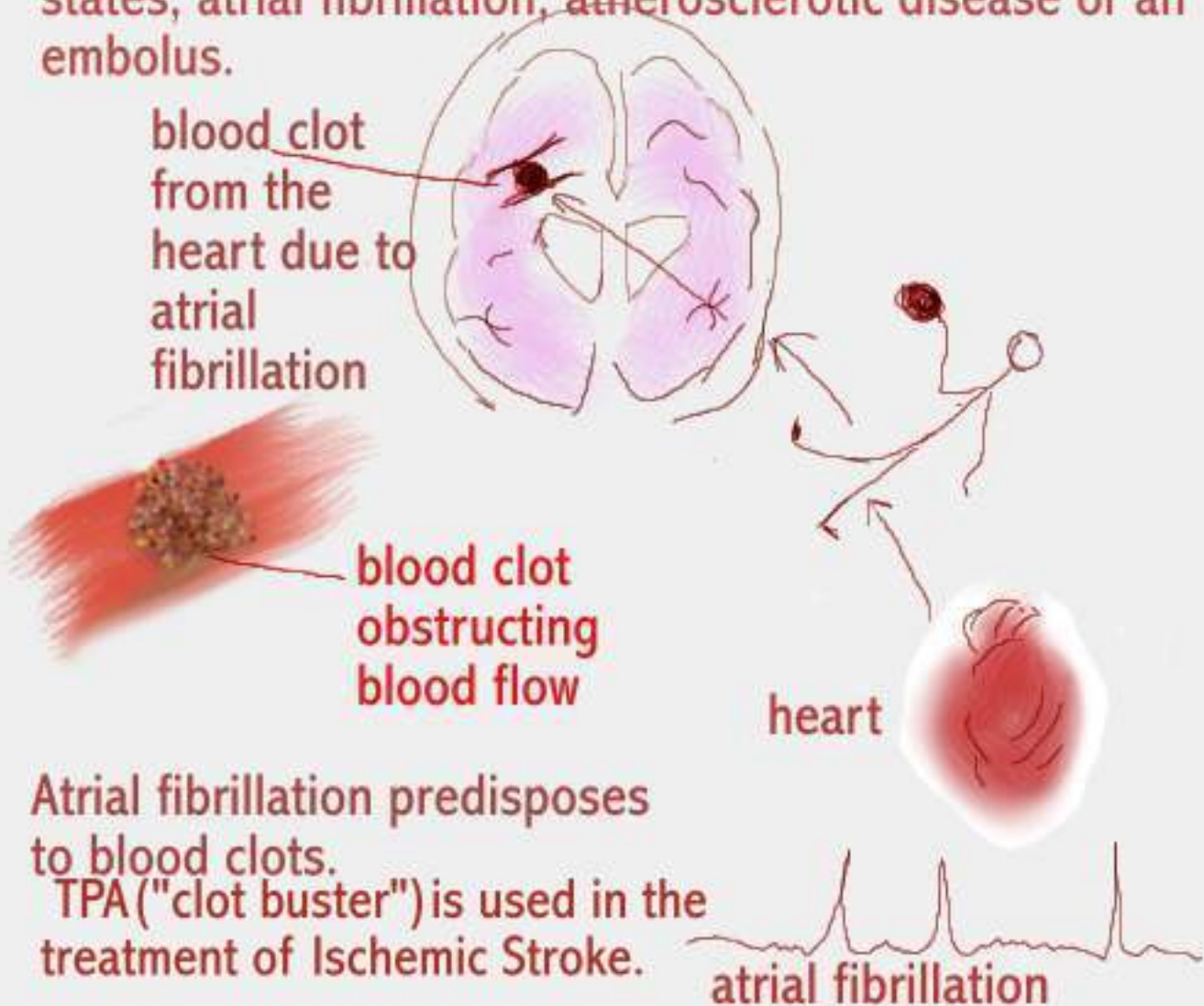
blood clot obstructing blood flow

heart

Atrial fibrillation predisposes to blood clots.

TPA ("clot buster") is used in the treatment of Ischemic Stroke.

atrial fibrillation



CLOT FORMATION IN THE HEART DUE TO ATRIAL FIBRILLATION



Incomplete contraction of the atria results in incomplete emptying of the atria , which leads to clot formation. A clot may break free and travel to the brain , causing a stroke. Stroke may be caused by atrial fibrillation , if left untreated.



How accurate is your neurological assessment?
Is your patient awake and alert and can talk like
a parrot or lethargic and barely responds?

ACCURATE PATIENT ASSESSMENT



2.If your patient continues not to respond, assess the airway for patency.

3. Check vital signs and oxygen saturation.

4. Document findings and notify MD. Your patient may need a work-up and a higher level of care if not in a monitored area.

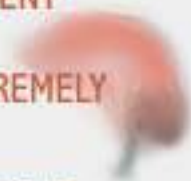
1.If your patient does not respond when spoken to (following commands) Try some simple form of stimulation for example, shaking the shoulder or a gentle tap.

Be sure to document your assessment .

A WALK THROUGH THE NEUROLOGICAL ASSESSMENT



ACCURATE NEUROLOGICAL ASSESSMENT IS EXTREMELY IMPORTANT. HERE ARE SOME HELPFUL HINTS:



ASSESS AND DOCUMENT- USE THE GLASGOW COMA SCALE

- IS PATIENT AWAKE AND ALERT, IF NOT CAN YOU AWAKEN PATIENT BY SPEAKING OR PAINFUL STIMULI?

- ASK PATIENT QUESTIONS LIKE NAME, DO YOU KNOW WHERE YOU ARE, BIRTHDATE, WHAT HAPPENED WHY YOU HAD TO COME TO HOSPITAL?

- ASK PATIENT TO FOLLOW COMMANDS LIKE SQUEEZING YOUR HAND, RAISE ARMS , SHOW FINGERS

- NOTE ANY SEIZURE ACTIVITY

.SEIZURES WILL BE DISCUSSED IN A LATER VOLUME

STROKE - THE IMPORTANCE OF GOOD BODY ALIGNMENT



FOLLOWING A STROKE, THE WEAK LIMB SHOULD BE WELL ALIGNED, TO PREVENT PERMANENT CONTRACTURES. A SOFT BALL OR A ROLLED WASHCLOTH PLACED IN THE AFFECTED HAND WILL SUPPORT AND PREVENT CONTRACTURES.

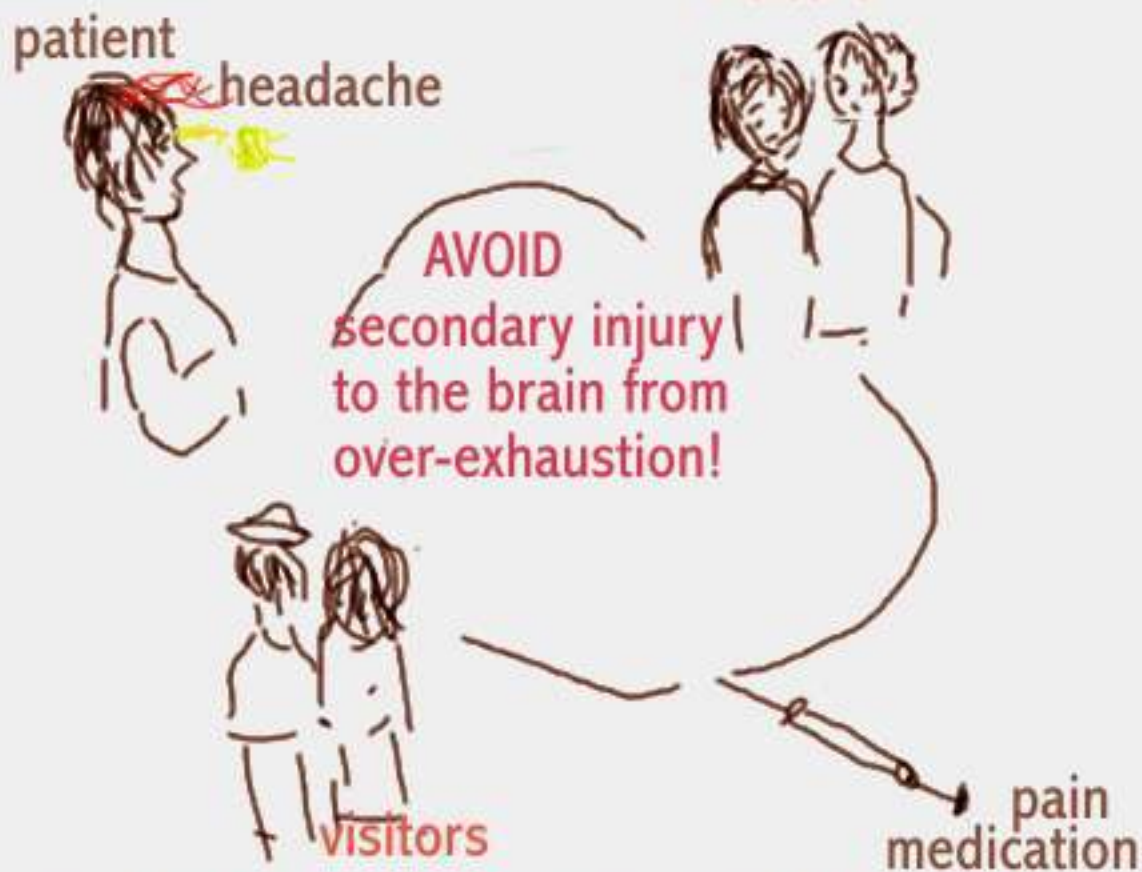
HELPFUL HINTS:

- 1) FOLLOW MD ORDERS.
- 2) Q2 HR. TURNS TO PREVENT SKIN BREAKDOWN AND PNEUMONIA.
- 3) ACTIVE AND PASSIVE ROM TO PREVENT CONTRACTURES. PT/OT AS ORDERED
- 4) MOUTH CARE TO PREVENT INFECTION
- 5) PATIENT AND FAMILY EDUCATION IS NECESSARY.



PREVENTION OF FOOTDROP IS ALSO IMPORTANT. PATIENTS USUALLY HAVE A PAIR OF TENNIS SHOES OR SPECIAL SPLINTS PUT ON WHILE IN BED, TO PREVENT FOOTDROP.

Patient and family education is of paramount importance. Patients who have experienced a bleed into the brain will need REST to avoid uncontrollable headaches.



Too much pain medication may mask the real neurological status of the patient.

DEAR NURSES,

HOPE YOU ENJOYED VOLUME 1 OF THE
"STROKE SERIES". PLEASE CONTINUE ON TO
VOLUME 2 " CRANIAL NERVE ASSESSMENT"
TO LEARN MORE ABOUT GOOD
NEUROLOGICAL ASSESSMENT.

