



The Brain....The Body...and You

STROKE NETWORK
of Southeastern Ontario


St. Lawrence
College


**CORPORATE
LEARNING
& PERFORMANCE
IMPROVEMENT**


Strategic learning for real results.

From Prevention to Life After Stroke

Presented by:
Delanya Podgers, NP, MN, CRE



Overview of Workshop

- ▶ What is a Stroke
 - ▶ Types of Strokes
 - ▶ The “Warning” Signs
 - ▶ Risk Factors for Stroke
 - ▶ Effects on an Individual & Family
 - ▶ Management and Care
- 

Stroke

Stroke occurs every 9 minutes in Canada

- ▶ Stroke is the 3rd leading cause of **DEATH** and **LEADING** cause of adult **DISABILITY** in Canada
- ▶ Leading cause of disability and LTC institutionalization
- ▶ Approx 100,000 Ontarians are living in the community with effects of stroke
- ▶ More females than males die
- ▶ Risk of stroke doubles every 10 yrs after 55
- ▶ Predicted: Stroke rates among 24 and 64 years of age will double in next 15 years!

- ▶ Today we can...
 - Treat stroke
 - Decrease risk
 - Improve outcomes for survivors
 - Avoid disability
- ▶ Despite this, 60 % of Stroke Survivors are left with a moderate to severe disability

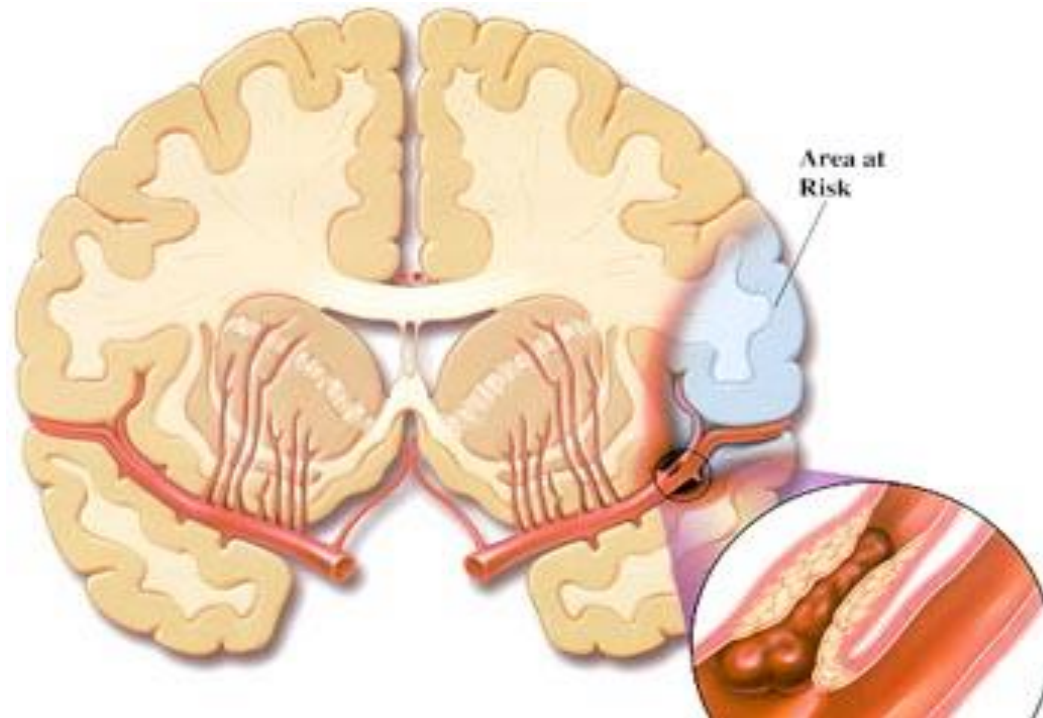
Stroke

What is a stroke?

- ▶ It is an interruption in the blood supply to the brain causing injury to that part of the brain

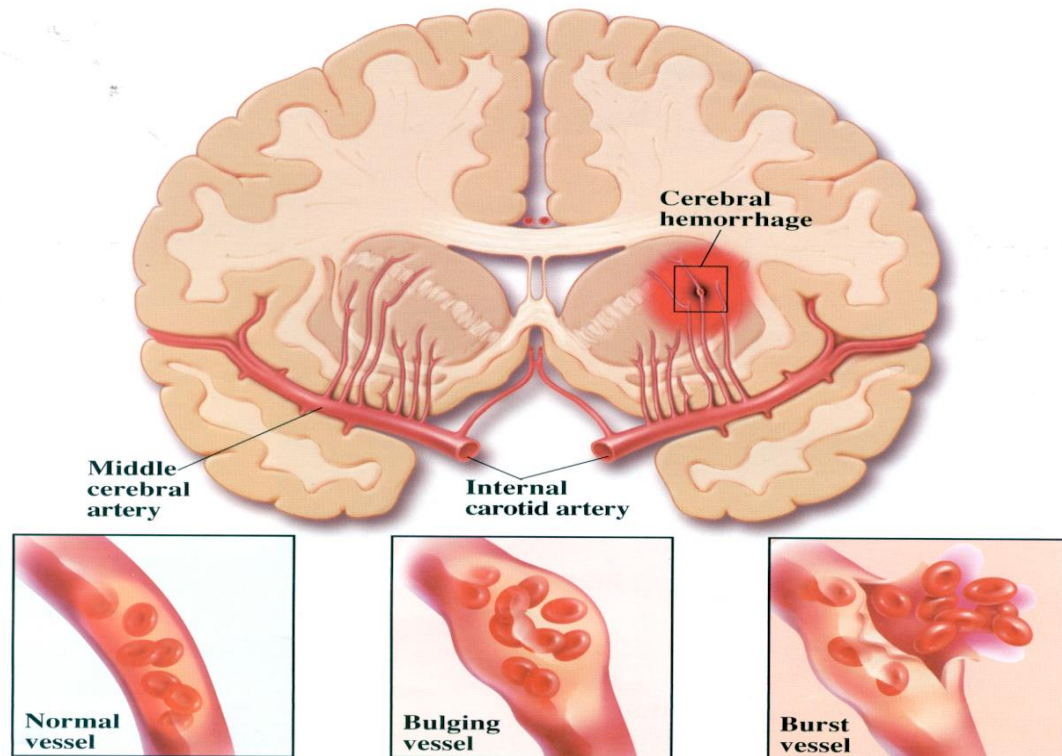
Ischemic Stroke

Sudden injury to a part of the brain caused by an occluded blood vessel



Hemorrhagic Stroke

Sudden injury to a part of the brain caused by the rupture of a blood vessel



Signs and Symptoms of Stroke



FACE is it drooping?
ARM**S** can you raise both?
SP**E**E**C**H is it slurred or jumbled?
TIME to call 9-1-1 right away.

ACT **F****A****S****T** BECAUSE THE QUICKER YOU ACT,
THE MORE OF THE PERSON YOU SAVE.

© Heart And Stroke Foundation of Canada, 2014

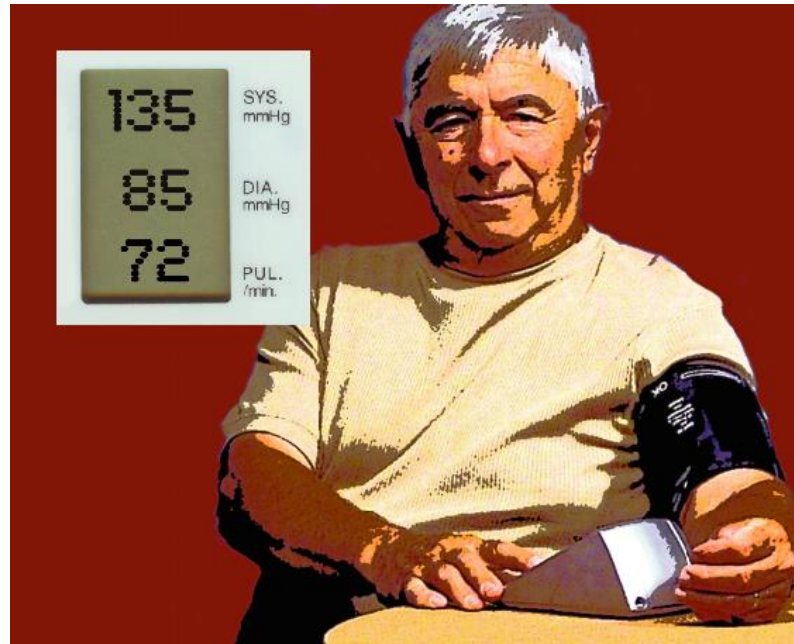
Also react to: dizziness, vision problems, swallowing
problems, headache, leg weakness

STROKE IS A MEDICAL EMERGENCY!

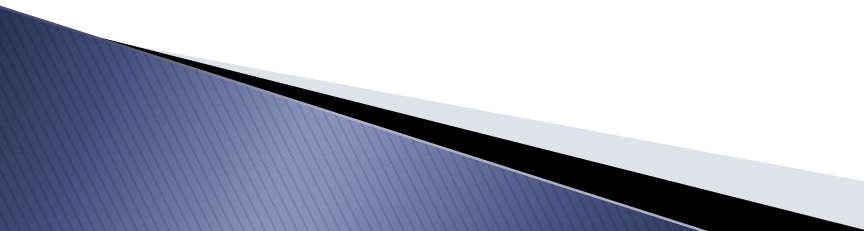
- 86% of individuals experiencing stroke symptoms did not feel they were serious enough to call 911
- For every minute delay in treating a stroke, the average patient loses 1.9 million brain cells



Risk Factors for Stroke



Non– Modifiable Risk Factors

- ▶ Age
 - Increased risk after 55 years of age
 - ▶ Gender
 - *After menopause* women have a higher risk than men
 - ▶ Genetic factors
 - Parent or sibling had a stroke before age 65
 - ▶ Ethnicity
 - Increased risk for people of African or South Asian background
 - ▶ Indigenous heritage
 - ▶ Prior stroke or TIA
- 

Modifiable Stroke Risk Factors

Lifestyle

- ▶ Diet
- ▶ Smoking
- ▶ Obesity
- ▶ Sedentary life
- ▶ Excess alcohol intake

Disease

- ▶ High blood pressure
- ▶ Diabetes
- ▶ High cholesterol
- ▶ Heart disease / arrhythmias
- ▶ Coagulation disorders
- ▶ Vascular disease
- ▶ Sleep apnea

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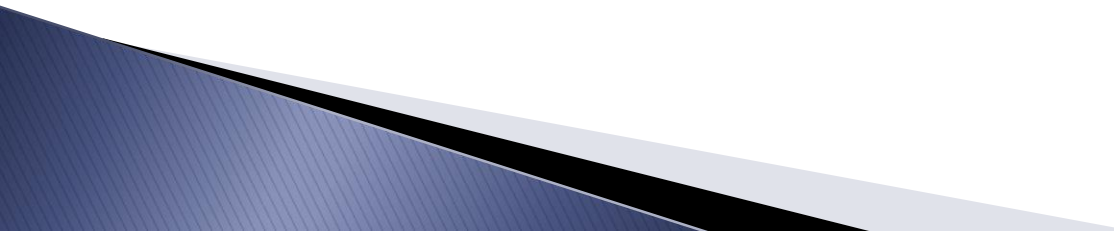
"You've got the blood pressure of a teenager – who lives on junk food, TV and the computer."

RISKS THAT CAN BE MODIFIED

Did you know that 90% of strokes are linked to 10 avoidable risks?

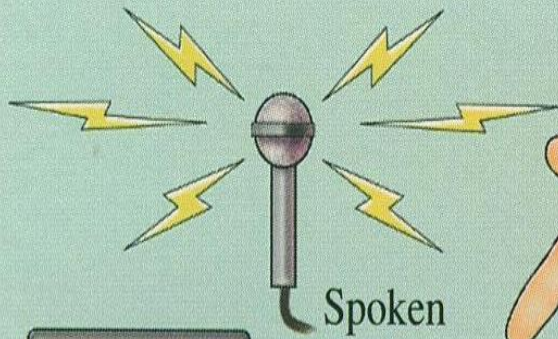
- 1) Control high blood pressure
 - 2) Exercise 5 times a week
 - 3) Eat a healthy, balanced diet (high in fruit/vegetables, low in sodium)
 - 4) Reduce your cholesterol
 - 5) Maintain a healthy BMI or waist to hip ratio
 - 6) Stop smoking and avoid second-hand exposure
 - 7) Reduce alcohol intake
 - 7) Identify and treat atrial fibrillation
 - 8) Reduce risk from diabetes
 - 9) Get educated about stroke
- Other modifiable risk factors:
- ❑ Birth control & hormone replacement therapy risks
 - ❑ Avoid recreational drug use
 - ❑ Manage high stress levels

Risk of Re-Stroke

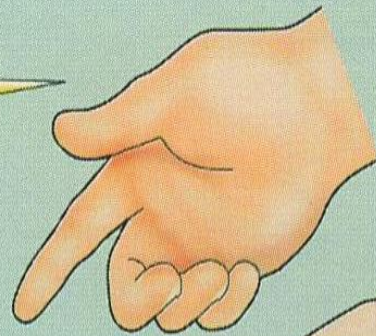
- ▶ Approximately one-third of survivors experience a recurrent stroke within 2 years
 - ▶ 3% have a second stroke within 30 days of the first event
 - ▶ Managing risk is the key to preventing re-stroke
- 

A Little Anatomy.....

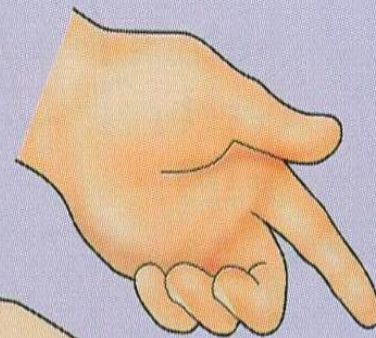




Spoken language



Right hand



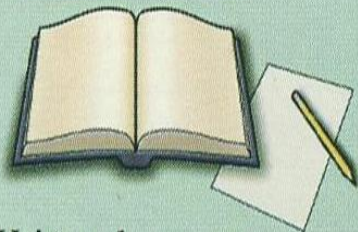
Left hand



Music



Number skills

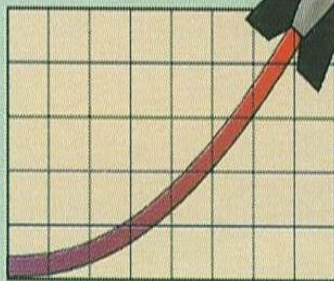


Written language

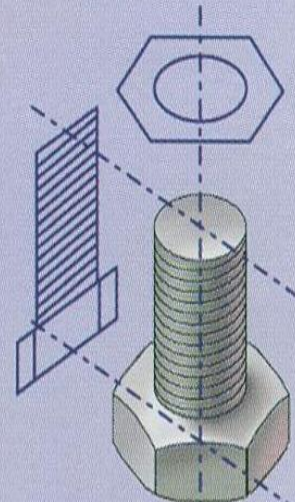
Reasoning



Scientific functions



Artistic functions



Spatial orientation

Art awareness



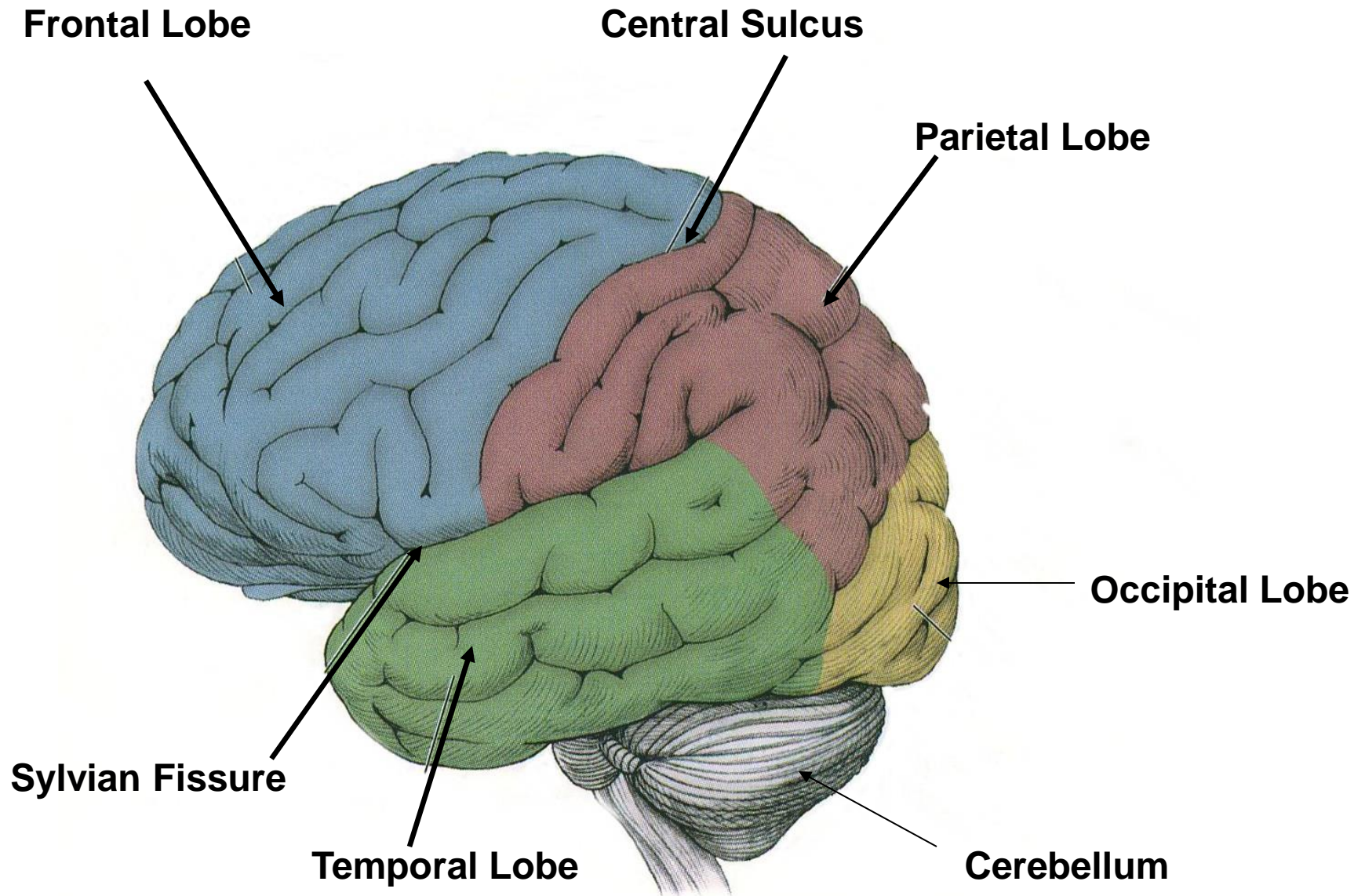
Creativity



Insight

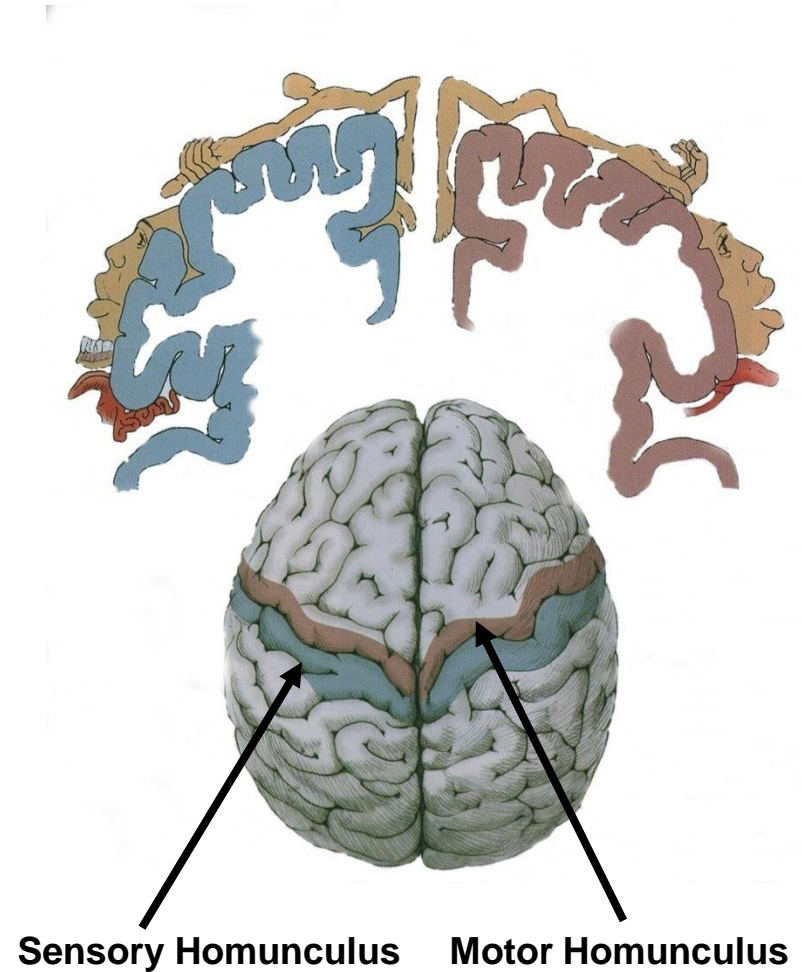
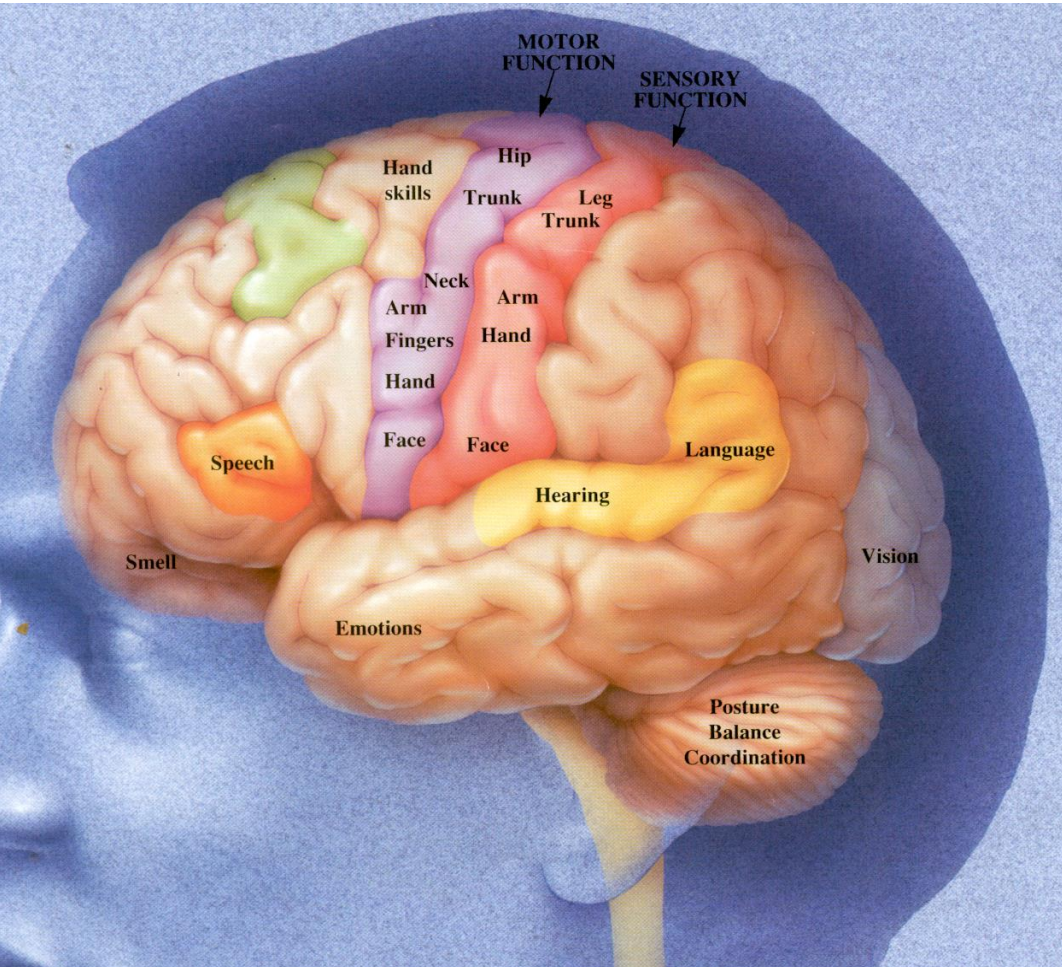
- ▶ Left hemisphere stroke video clip

- ▶ Right hemisphere video clip



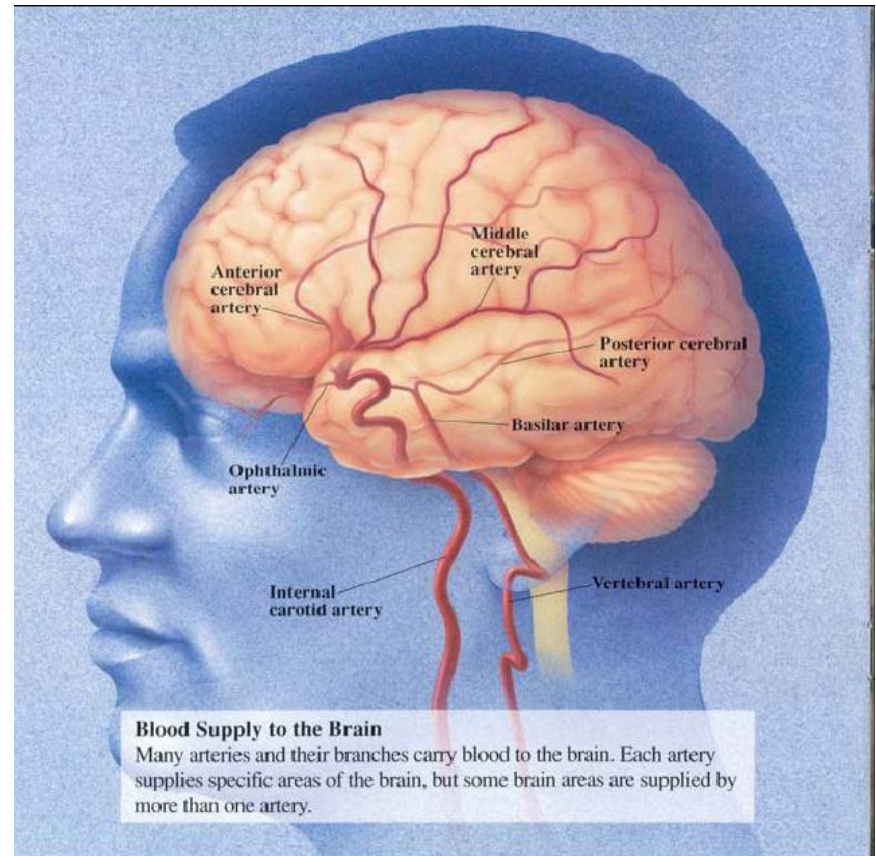
Gross Anatomy

Motor and Sensory Cortex

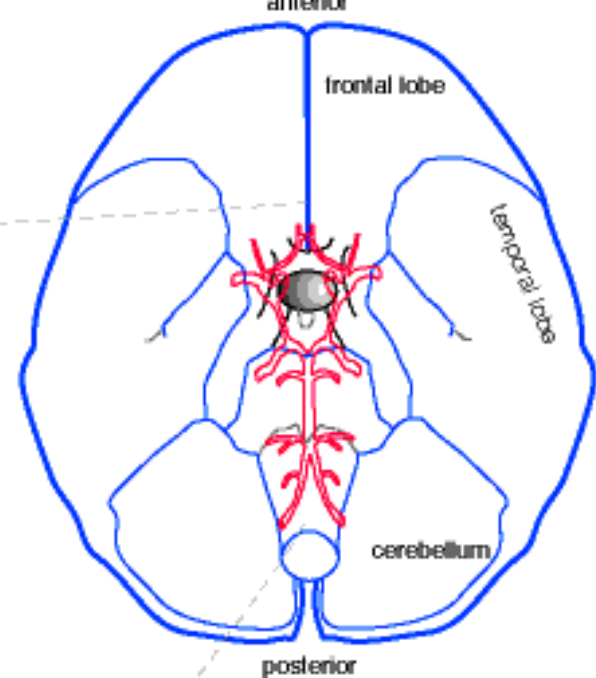
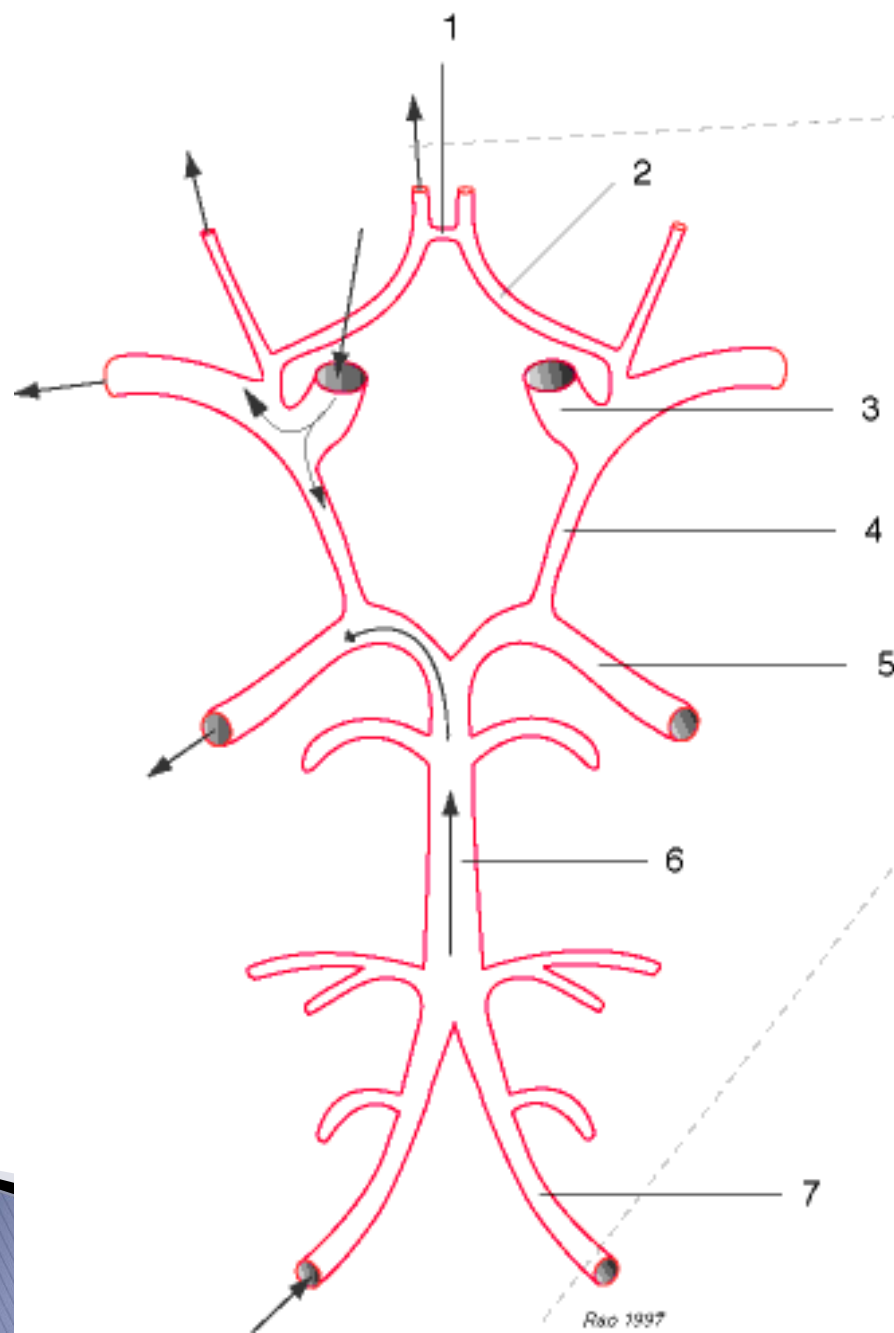


Cerebral Circulation

- ▶ Brain derives its arterial supply from carotid and vertebral arteries
- ▶ Internal carotid arteries and branches supply anterior 2/3 of cerebral hemisphere
- ▶ Vertebral and basilar arteries supply posterior and medial regions of hemispheres, brainstem, diencephalon, cerebellum and cervical spinal cord



The Arterial Circle of Willis



Inferior view of the brain

Arteries of the Circle of Willis*

1. Anterior communicating*
2. Anterior cerebral*
3. Carotid
4. Posterior communicating*
5. Posterior cerebral*
6. Basilar
7. Vertebral

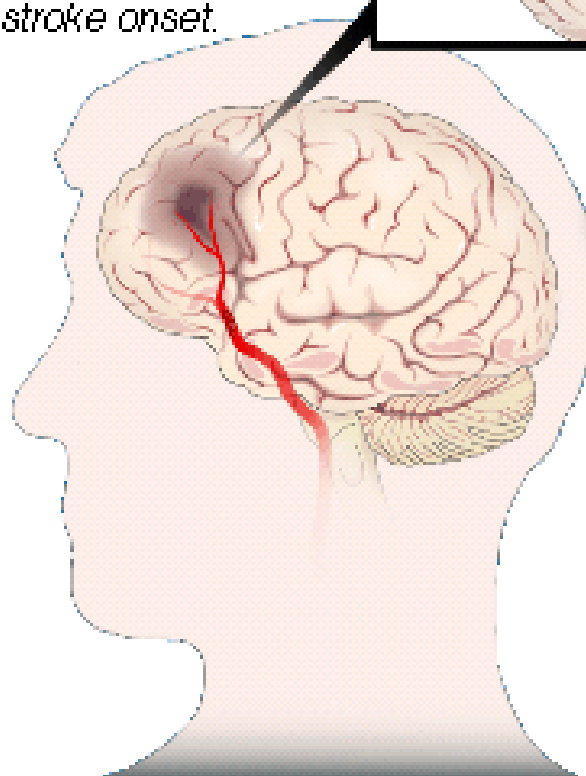
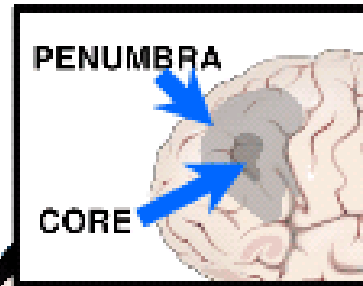
Stroke Management

When an Ischemic Stroke Occurs:

- ▶ In ischemic Stroke there is obstruction of blood vessel and this initiates the “ischemic cascade”
- ▶ Cells can not survive without oxygen, and irreversible brain damage occurs at 4–6 minutes without oxygen
- ▶ Cells in the core will die but the penumbra, or surrounding area, is potentially viable and this region can *potentially* be salvaged

Goal of Emergency Stroke Care: Save the Penumbra

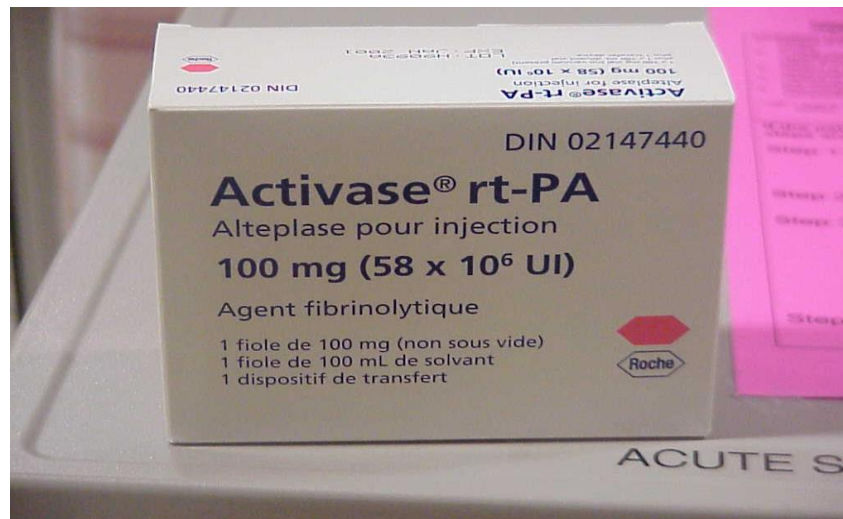
Penumbra is zone of reversible ischemia around core of irreversible infarction—salvageable in first few hours after ischemic stroke onset.

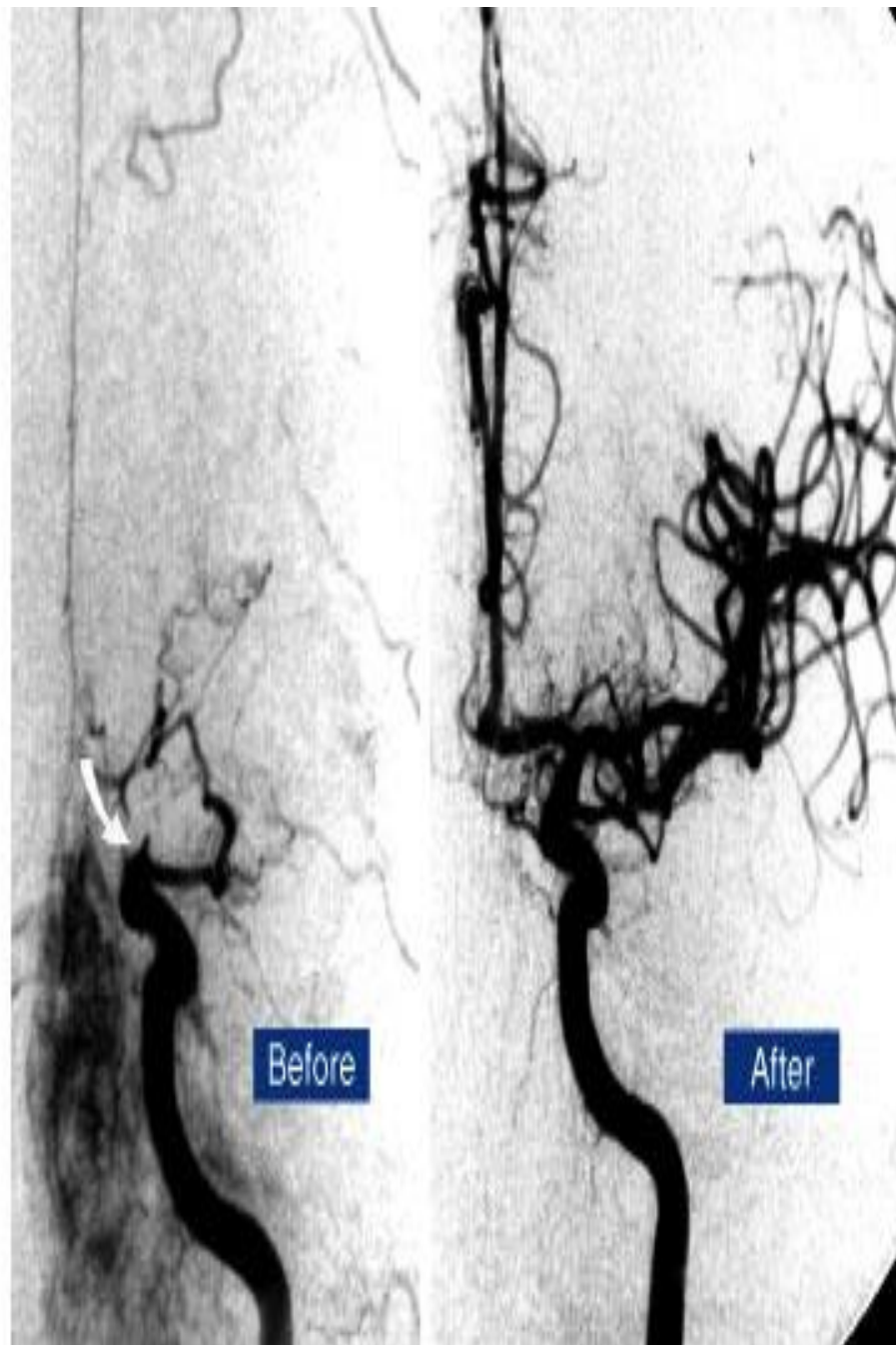


From *Advanced Stroke Life Support*
© 2004, University of Miami

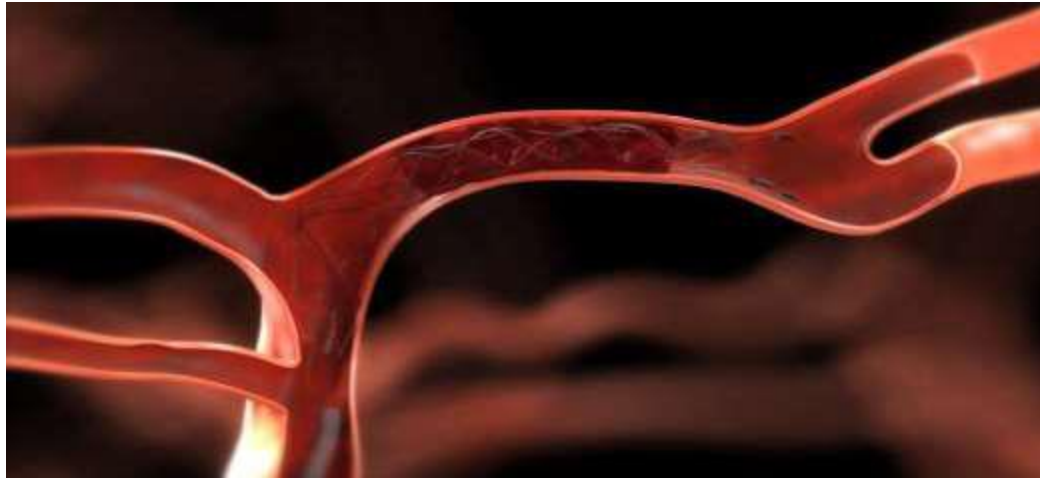
Thrombolytic Therapy

- ▶ t PA must be initiated within 4.5* hours of the onset of a stroke or from the time the person was “last seen normal” a stroke





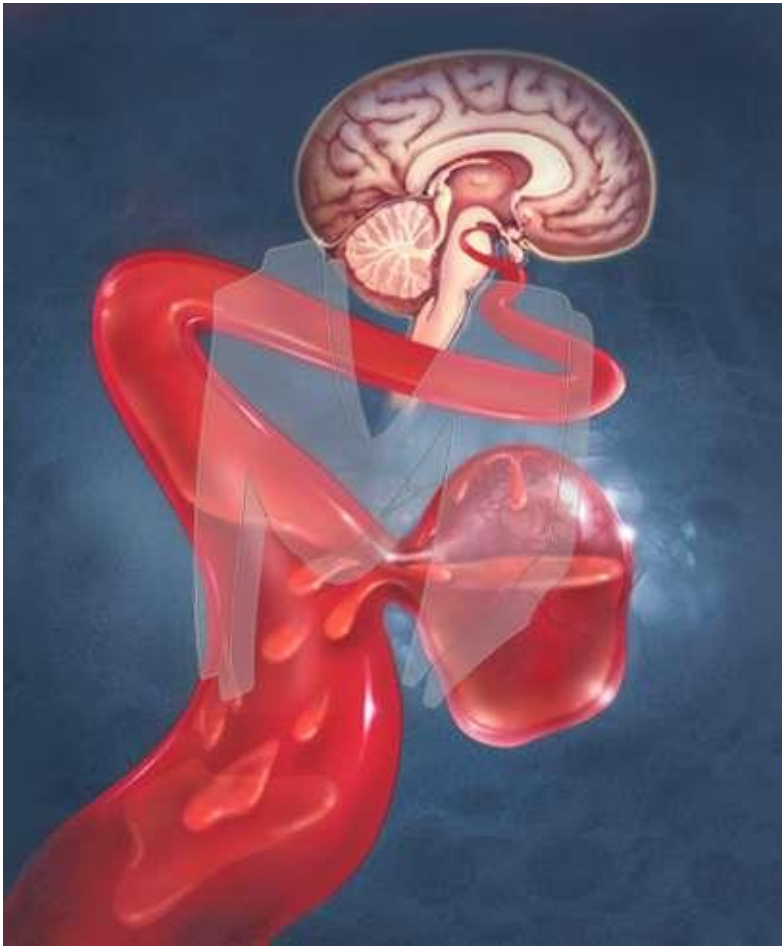
Endovascular Treatment



When a Hemorrhagic Stroke Occurs

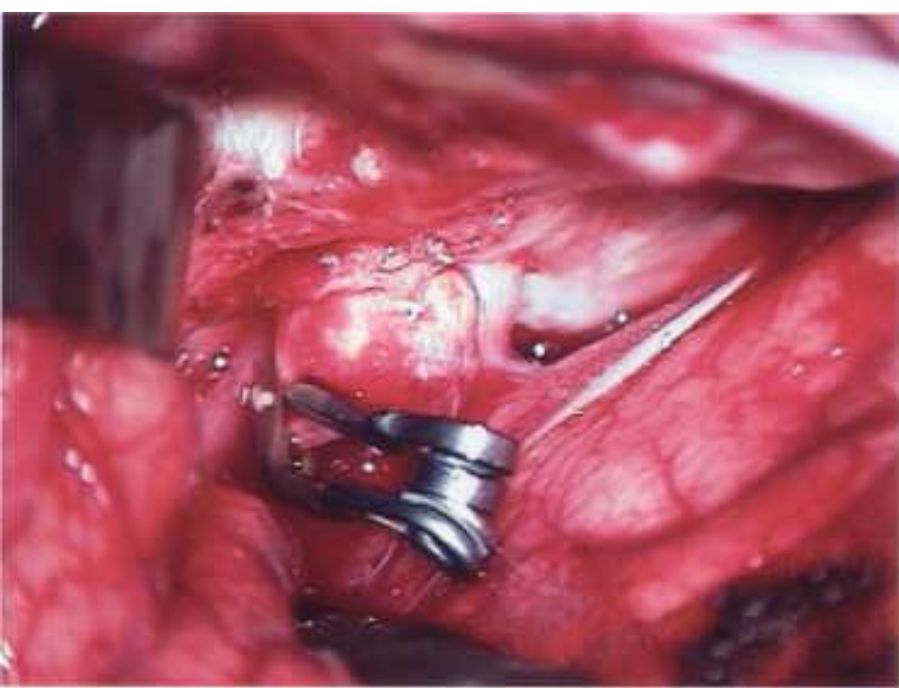
- ▶ Bleeding into the brain tissue results in:
 - Increased pressure within the skull (increased intracranial pressure)
 - Decreased blood supply to cerebral tissues

Causes of Hemorrhagic Stroke

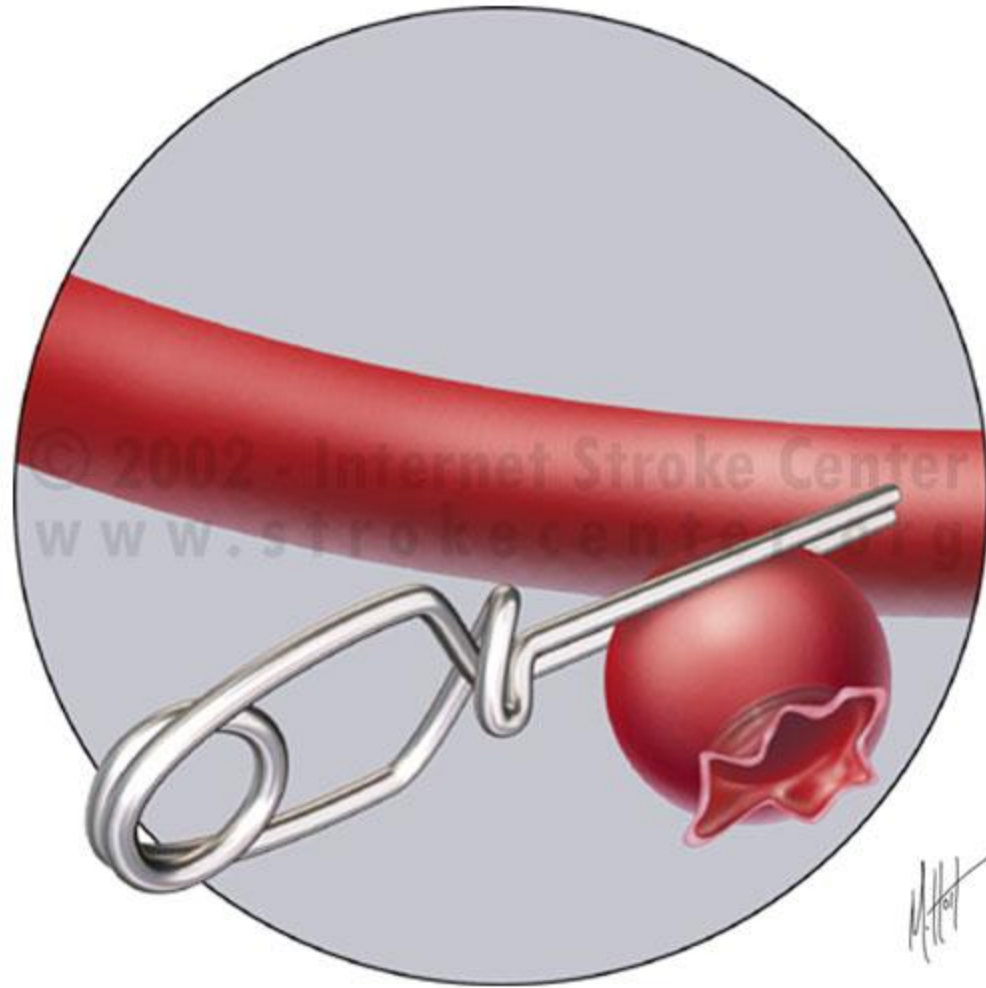


- Aneurysm
- Arteriovenous malformation
- Hypertension
- Arterial Dissection
- Subarachnoid hemorrhage
- Hemorrhagic transformation of an ischemic stroke

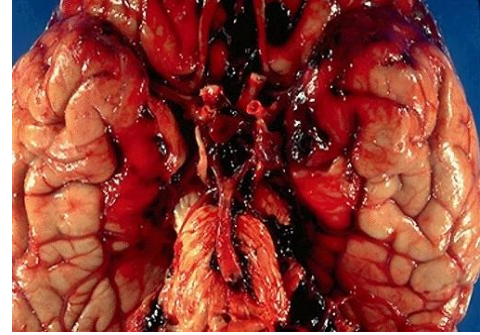
Clinical Management of Hemorrhagic Stroke



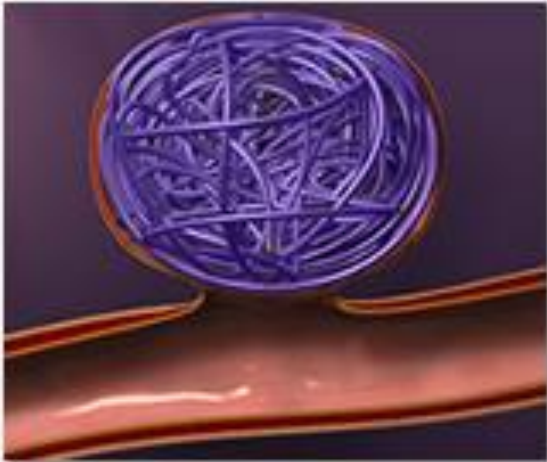
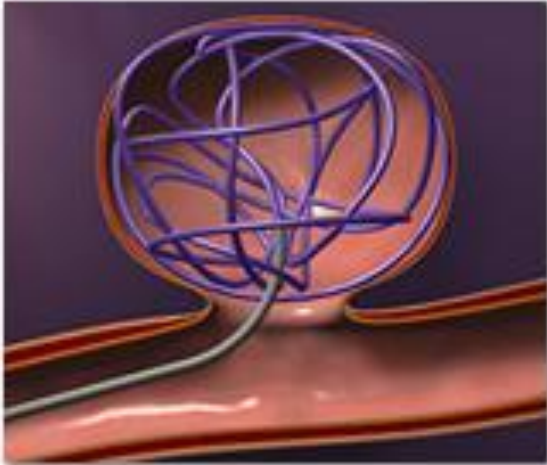
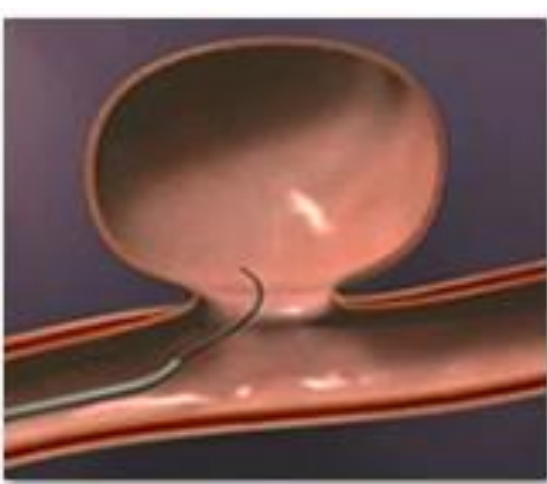
Surgical intervention:
Clipping



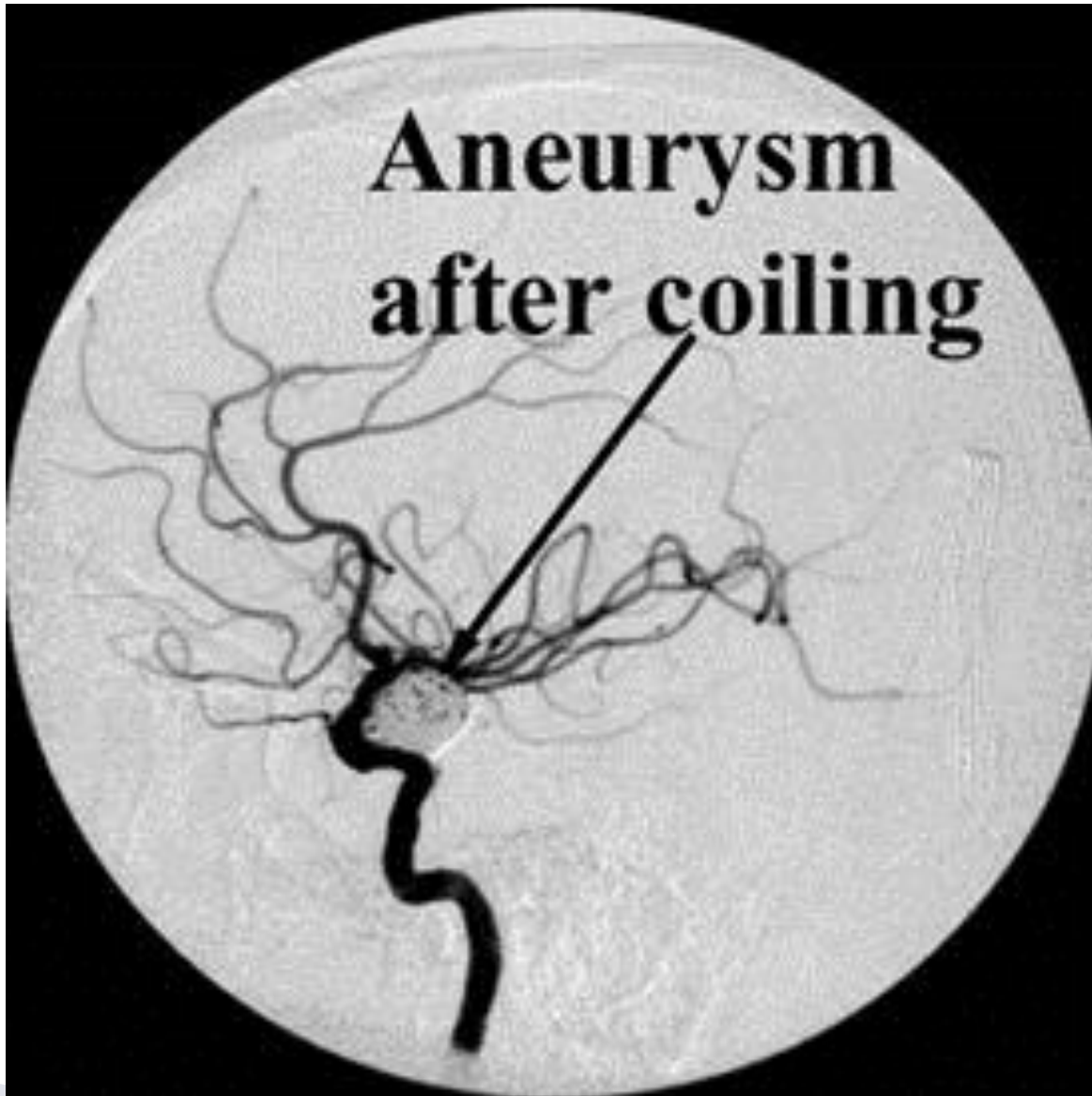
Coiling



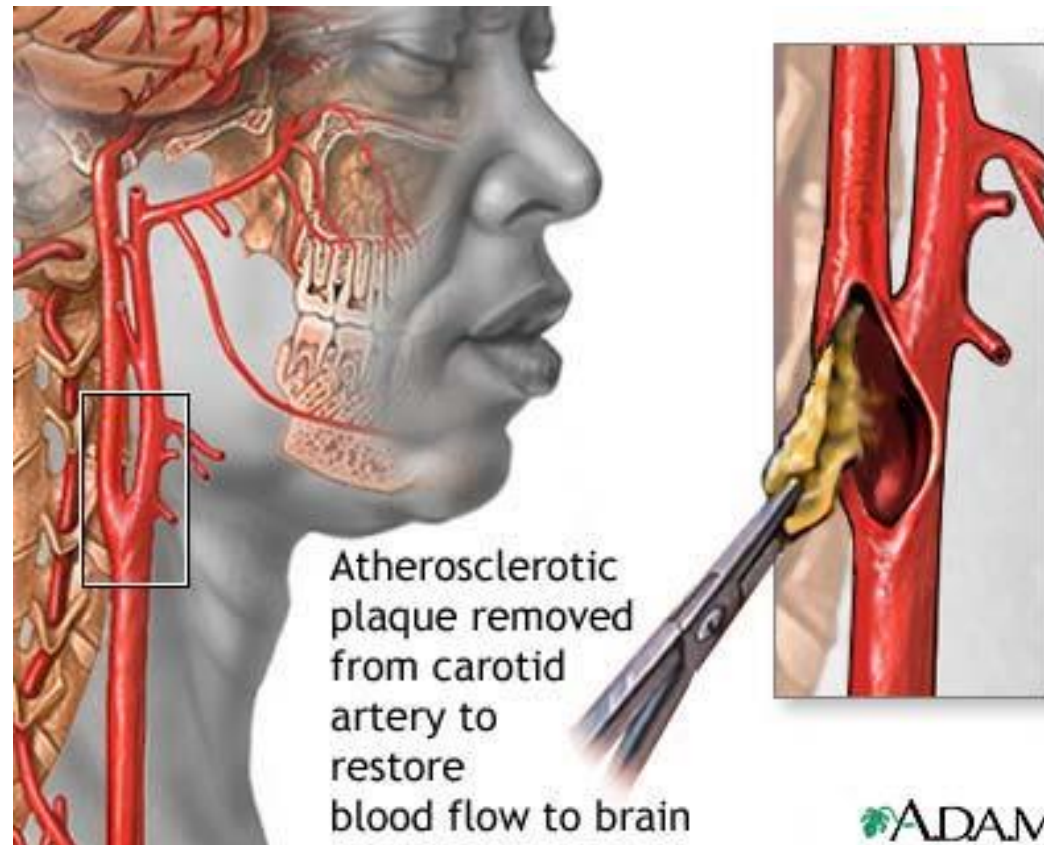
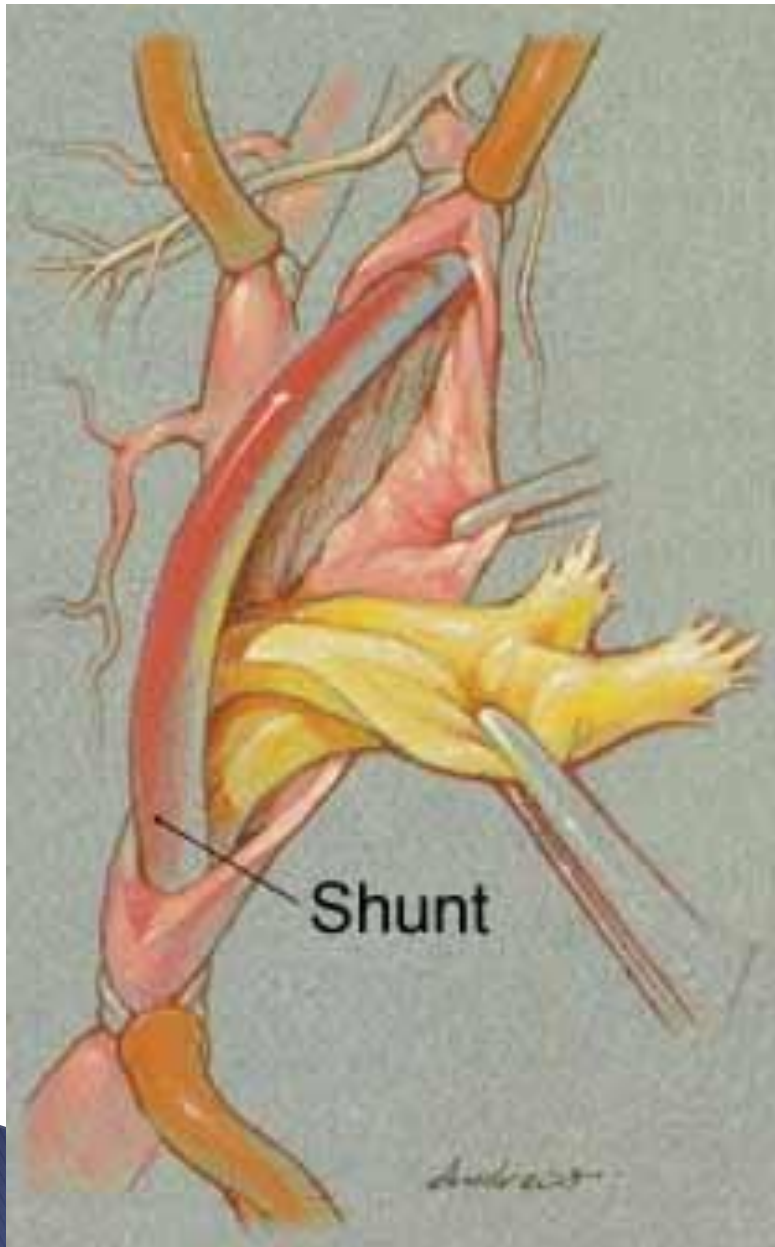
- Neurointerventional procedure
- Suitable for those with high grade or high risk aneurysms, elderly, posterior circulation aneurysm, patients with comorbid conditions



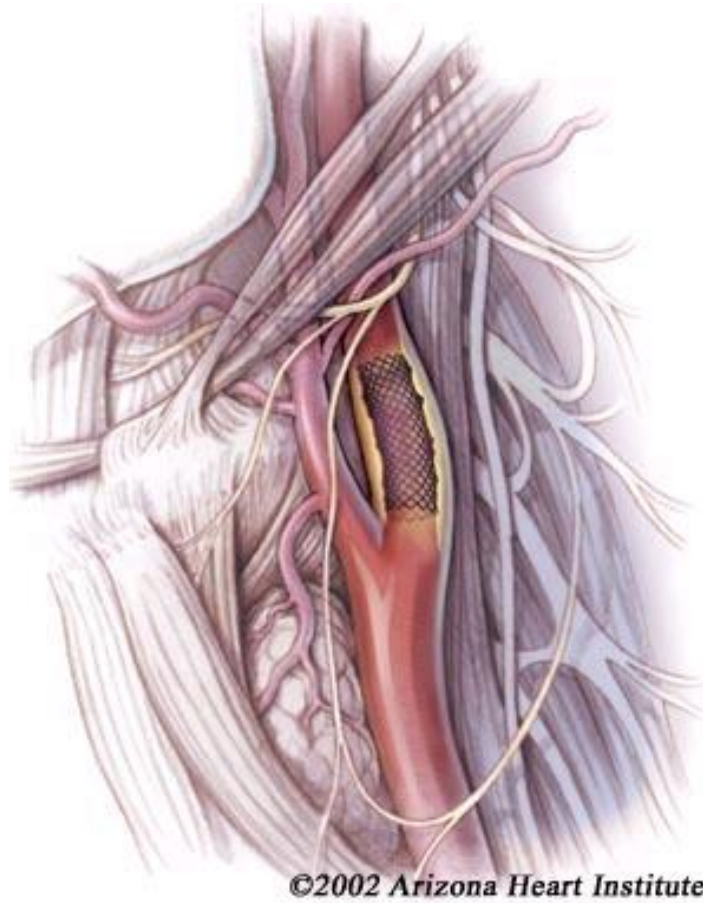
**Aneurysm
after coiling**



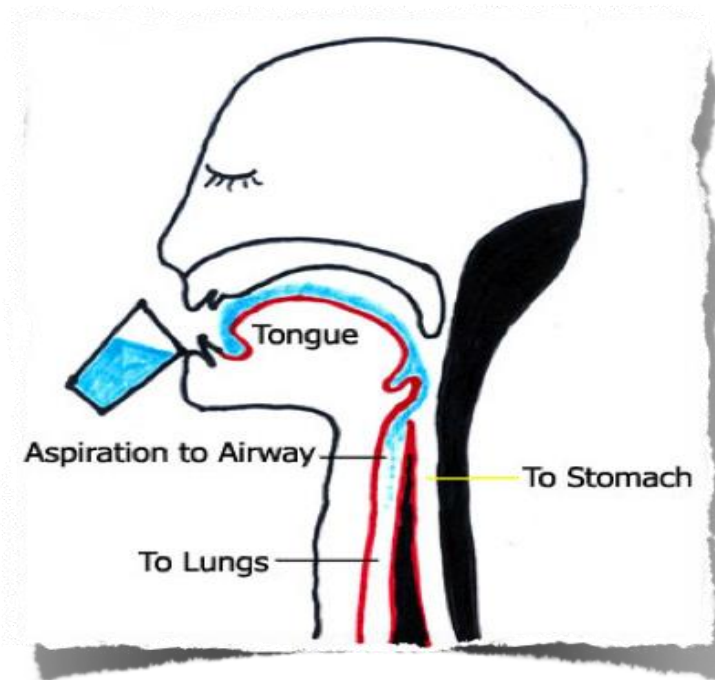
Endarterectomy



Carotid Stent



Common Stroke Deficits & Complications



Motor and Sensory Deficits

▶ Motor deficits

◦ Strength

- Can range from weakness to paralysis of the face, arm, leg, torso

◦ Muscle tone

- Flaccidity
- Spasticity

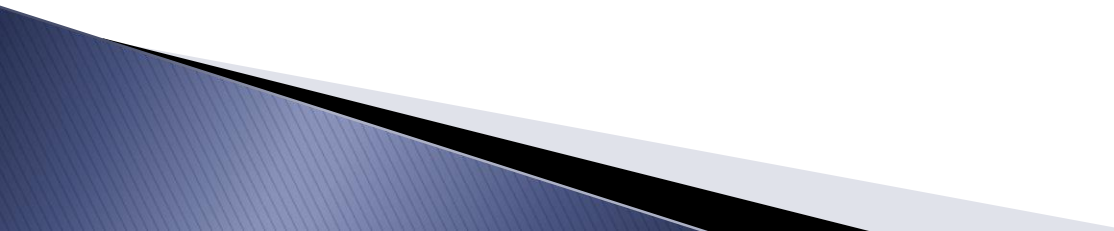
▶ Balance

- Due to a combination of motor, sensory, visual changes

▶ Sensory deficits

- Can range from numbness to loss of sensation of the face, arm, leg, torso

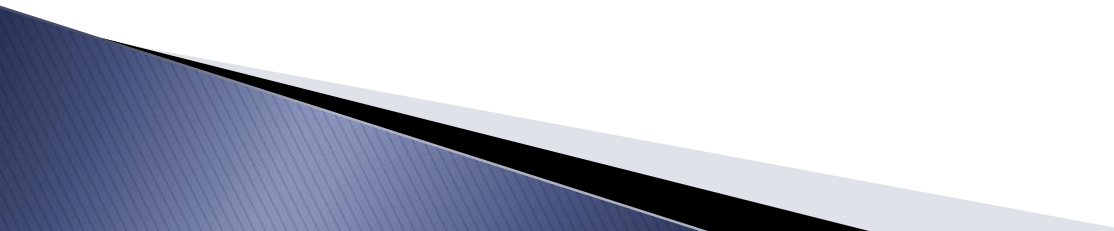
How you can help

- ▶ Positioning
 - Optimizing sitting position
 - Consider the affected shoulder
 - ▶ Assist with mobilizing and repositioning
 - From bed to chair
 - Within the bed
 - ▶ Use of assistive devices and aides
 - Appropriate and as recommended
 - ▶ Use good body mechanics
 - ▶ Communicate clearly
 - ▶ Mobilize to help limit complications
- 

Visual Deficits

- ▶ Visual neglect
 - Decreased awareness of the environment on the affected side
- ▶ Visual field loss
 - Inability to see the space around them
- ▶ Double vision
 - Inability to put the image from each eye together
- ▶ Loss of visual acuity
 - Object do not appear sharp and clear
- ▶ Loss of ocular motility
 - Inability of eyes to move in a coordinated manner

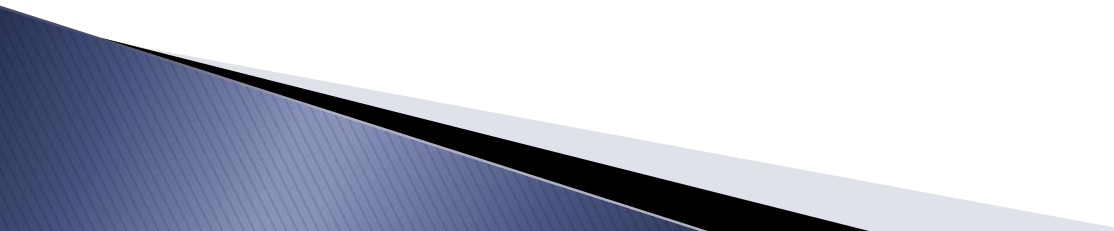
How you can help

- ▶ Reduce clutter
 - ▶ Ensure good lighting
 - ▶ Supervise when ambulating
 - ▶ Encourage patient to scan environment
 - ▶ Eye patching if prescribed
 - ▶ Use ruler or coloured guide for reading
- 

Communication Impairments

- ▶ Dysarthria
 - Slurred speech
- ▶ Aphasia
 - Difficulty understanding or using language
- ▶ Cognitive communication impairments
 - Problems organizing thoughts and communicating clearly

How you can help

- ▶ Establish a communication partnership
 - ▶ Be respectful
 - ▶ Acknowledge the time commitment
 - ▶ Consider verbal and non-verbal communication
 - ▶ Consider the environment
 - ▶ Use clear, simple messages
 - ▶ Utilize aides
 - ▶ Be patient and persistent
 - ▶ Be honest
- 


Dysphagia

- ▶ Dysphagia
 - 50% of stroke survivors have difficulty with swallowing
 - 20% will die within the first year related to aspiration pneumonia
- ▶ Stroke survivor may experience coughing, delayed swallowing, altered voice quality, pocketing

Effects of Dysphagia

- ▶ Dehydration
- ▶ Malnutrition
- ▶ Aspiration
- ▶ Impaired quality of life
- ▶ Nutritional issues
 - Can be pre-existing and compounded by dysphagia motor deficits, cognitive impairment, visual deficits, mood, etc

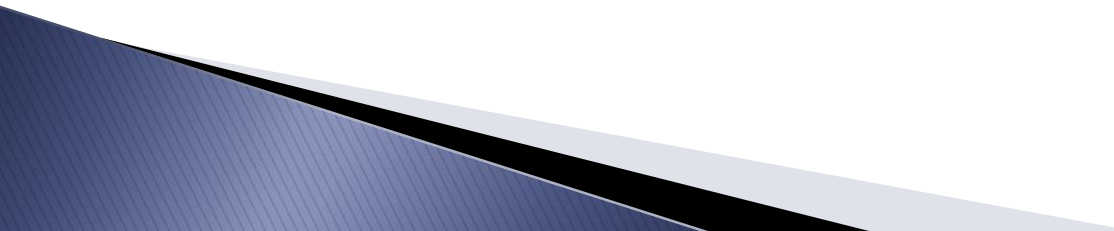
How you can help

- ▶ Identify problems
 - ▶ Proper positioning
 - ▶ Reduce distractions
 - ▶ Monitor eating and intake
 - ▶ Assist with feeding
 - ▶ Adaptive equipment as needed
- 

Incontinence

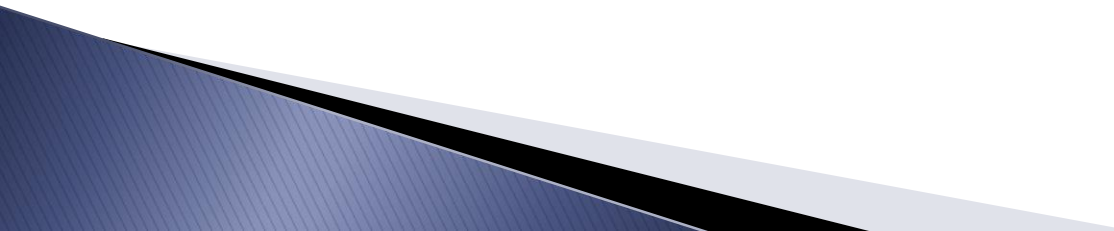
- ▶ Significant impact on quality of life
 - Social and leisure activities
 - Personal relationships
- ▶ One of the main reasons for admission to LTC
- ▶ Contributes to:
 - Skin breakdown
 - UTIs
 - Falls
 - dehydration

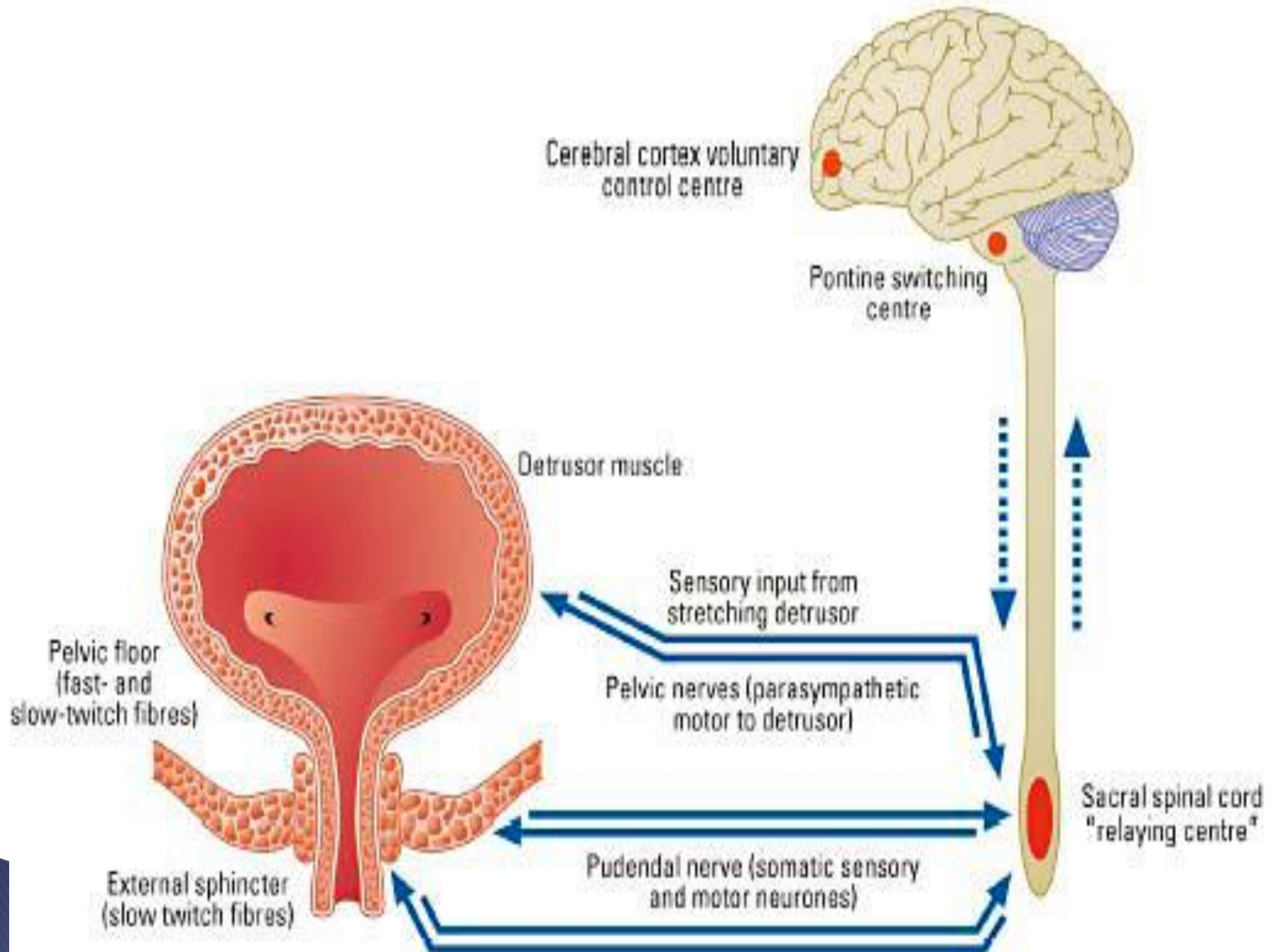
Incontinence

- ▶ Up to 80 % of stroke patients have incontinence or continence issues during their acute admission
 - ▶ Urinary incontinence at 24 hours post stroke is a predictor of functional outcome
 - ▶ Incidence decreases to 20 % by 6 months post stroke
 - ▶ Stroke survivors may:
 - Often experience urgency to void but have difficulty or be unable to control the urgency
 - Have diminished ability to feel bladder fullness and have bladder control
 - Pre-stroke issues will likely persist
- 

Normal Bladder Function

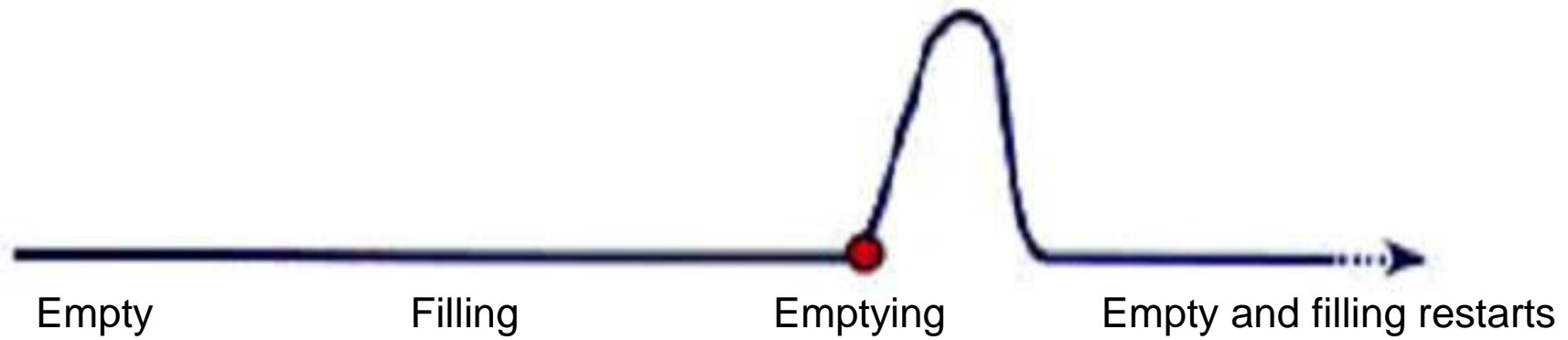
► Requires:

- Neurological Function: the message getting to and from the brain
 - Urologic Function: the ability to produce urine and store it in the bladder
 - Psychological Function: cognition, perception, ability to interpret the message
 - Mobility: the physical activity to get to and use appropriate facilities
- 



Normal Bladder Function

- ▶ Normal adult bladder holds 500–600mL urine
- ▶ Aging bladder
 - holds 250–300mL urine
 - More frequent voiding
 - Thinning of the bladder wall
 - more frequent, less controlled voiding
 - Inability to empty the bladder completely
 - results in urinary retention. The bladder becomes like an over stretched balloon, unable to regain its original shape because of loss of elasticity



Detrusor muscle relaxes
+
Urethral sphincter tone
+
Pelvic floor tone



Detrusor muscle relaxed
+
Urethral sphincter contracts
+
Pelvic floor contract

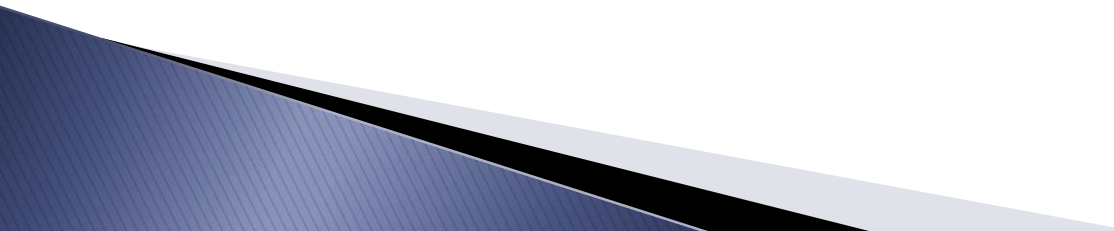


Detrusor muscle contracts
+
Urethral sphincter relaxes (voluntary control)
+
Pelvic floor relaxes
+
Micturition



Detrusor muscle relaxes
+
Urethral sphincter tone
+
Pelvic floor tone

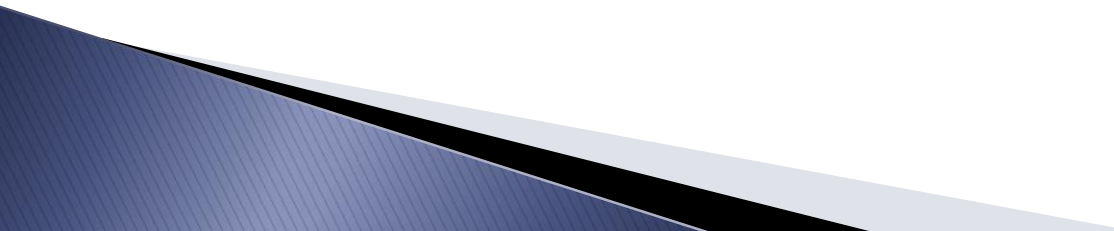
Urinary Issues

- ▶ Urge Incontinence
 - ▶ Retention with overflow
 - ▶ Functional incontinence
 - ▶ Stress incontinence
- 

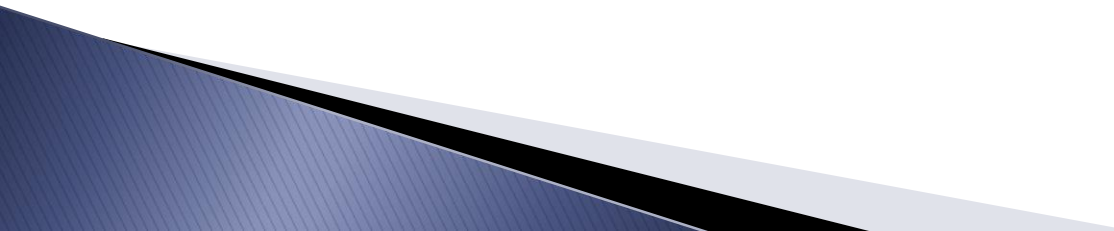
How you can help

- ▶ Develop a strategy
 - Prompted voiding
 - Monitoring
 - Prompting
 - Praising
 - Timed voiding
- ▶ Considerations
 - Age
 - Cognitive Awareness
 - Mobility Issues
 - Swallowing and Nutrition Issues
 - Voiding Patterns

How you can help

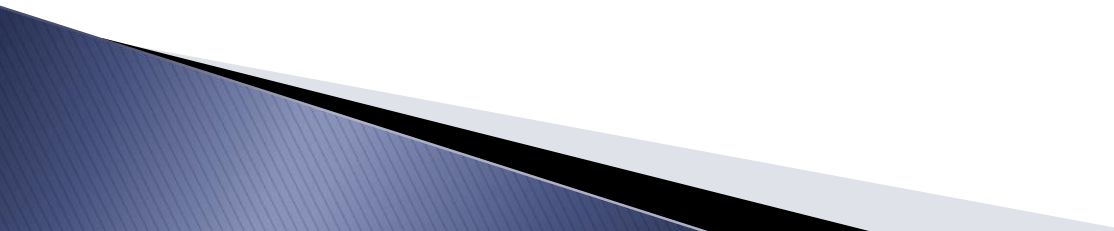
- ▶ Understand the use and role of assistive devices
 - Urinals, bedpans
 - Commode chairs
 - Mechanical lifts
 - Catheters and other products
 - ▶ Incontinence Products
 - Best use practices
 - ▶ Medications
 - Beneficial effects
 - Adverse Effects
- 

How you can help

- ▶ Complete an incontinence history, including pre-stroke baseline
 - ▶ Intake amounts and time
 - ▶ Bowel function
 - ▶ Medical history and medications
 - ▶ Psychosocial factors
 - ▶ Functional assessment
 - ▶ Physical assessment
 - ▶ Product Use
- 

How you can help

- ▶ Be observant for symptoms of urinary tract infections (UTI)
 - Increase in frequency of voiding or incontinent episodes
 - Complaints of increased urgency
 - Burning or pain when voiding
 - Cloudy, strong smelling urine
 - Changes in behavior, especially increased agitation when unable to communicate symptoms

- ▶ Ensure adequate fluid intake
 - ▶ Encourage an increase in fluids (where appropriate) when the survivor experiences burning during urination
 - ▶ Restrict caffeine intake to 2 cups a day or less
 - ▶ If excessive night voiding is a problem, adjust the timing of the fluid intake (not the amount per day) so more is taken earlier in the day and only 1 cup is taken after 7 p.m.
 - ▶ Report any change in bladder function to prompt for further investigation
- 

Depression

Depression is a chronic, overwhelming sense of sadness, loss of interest, and despair that interferes with a person's ability to function

- ▶ Up to 60% of stroke survivors may be affected
 - Caregivers can also experience depression
- ▶ Onset may be immediate or years later
- ▶ Medical illness resulting from chemical changes in brain; will not go away without treatment
- ▶ Can be mistaken for effects of stroke or aging
- ▶ Can be overlooked if individual has difficulty speaking (aphasia) or thinking

Depression Signs and Symptoms

▶Physical:

- Changes in sleeping/eating
- Unexplained aches and pains
- Fatigue
- Tearfulness

▶Attitudes:

- Loss of interest, “Gloom and Doom”
- Self-focus and self-loathing
- Difficulty connecting with others

▶Emotions

- Hopelessness, worthlessness, and guilt
- Anxiety, irritability or anger
- Thoughts of death and suicide

▶Mental functions

- Difficulty concentrating or making decisions
- Confusion; sense of living in a fog

How you can help

- ▶ Build a connection with the survivor
 - See changes that may signal depression
 - Actively listen, care and be non-judgmental
- ▶ Offer support
 - Reminders that depression is medical illness
 - Find resources for person/family
 - Provide hope; depression can be treated
 - Get permission to share concerns with team
- ▶
- ▶ Pharmacologic support may be required
- ▶
- ▶ Encourage activity
 - Find enjoyable activities
 - Encourage friends / family to visit

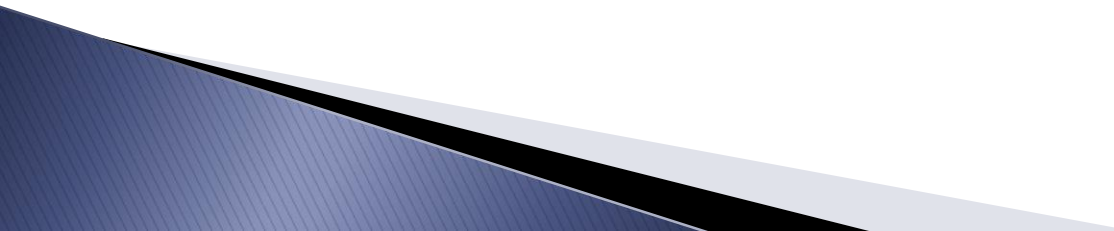
Cognition

- ▶ Attention
 - Being able to concentrate
- ▶ Orientation
 - Awareness of time, place, self
- ▶ Memory
 - Recall experience, information and skills
- ▶ Insight
 - Understanding limitations and abilities
- ▶ Judgment
 - Making good decisions
- ▶ Sequencing
 - Performing actins in the right order
- ▶ Problem solving
 - Identifying a problem and finding a solution

Cognitive Deficits

- ▶ Limitations that are difficult to see
 - Can result in abilities to be overestimated
- ▶ Can be subtle in nature
- ▶ Affect safety

How you can help

- ▶ Reduce distraction
 - ▶ Provide short, clear instruction
 - ▶ Help survivor focus on one thing at a time
 - ▶ Go slow
 - ▶ Repetition
 - ▶ Use memory aides and cues
 - ▶ Keep to a regular schedule of activities
 - ▶ Break tasks into steps
 - ▶ Encourage independence
- 

Leisure and Social

- Physical and cognitive (thinking) impairments caused by a stroke can make it challenging to have a satisfying and balanced lifestyle.
- Without meaningful activities, hobbies and pastimes, days can feel long and empty resulting in social isolation and depression

“I used to be an outgoing person. After my stroke I withdrew and didn’t go out or talk to people as much”

Why participating in activities can be challenging after a stroke:

- Physical weakness
- Lack of confidence
- Depression and or anxiety
- Aphasia
- Decreased mobility
- Difficulty initiating activities
- Difficulty thinking and understanding
- Difficulty understanding the environment
- Memory problems
- Activities not adapted
- Changed living situation
- Feeling worthless or helpless
- Unaware of community resources
- Unsure of leisure interests
- Limited finances
- Lack of transportation

How you can help

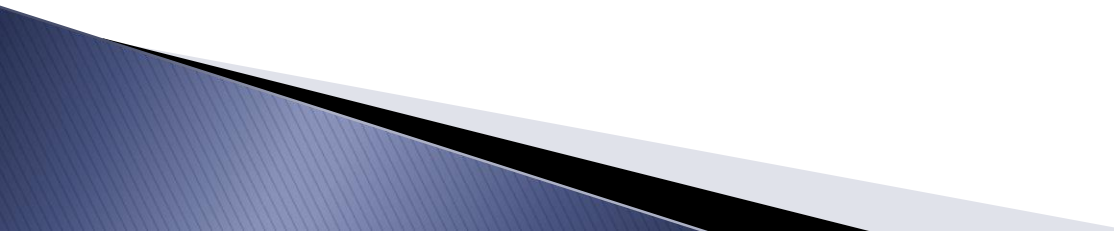
Ask the following questions....

- ✓ What do you like to do...what makes you smile?
- ✓ Who do you enjoy doing things with?
- ✓ What makes it hard to do your favorite activities now?
- ✓ How can I help you to prepare for and participate in activities?
- ✓ Last week you participated in _____(e.g. card games). Did you enjoy yourself?

What you can do to help

- ✓ Assist with choosing meaningful activities
- ✓ Encourage a return to activities previously enjoyed
- ✓ Ensure the individual is prepared to participate in the activity (hearing aids, glasses, mobility devices, etc.)
- ✓ Have necessary assistive devices ready (e.g., card holder)
- ✓ Find others with similar interests
- ✓ Support activity initiation. Remember that initiation for a stroke survivor can be difficult.

Individual and Family Effects

- ▶ Grief
 - ▶ Frustration
 - ▶ Fatigue
 - ▶ Anxiety
 - ▶ Emotional Liability
- 

YOUR ROLE AS PART OF THE STROKE CARE TEAM

Each member of the care team contributes to the recovery journey.



You can make a big difference in the **quality of life** of someone who has had a stroke

Case Studies

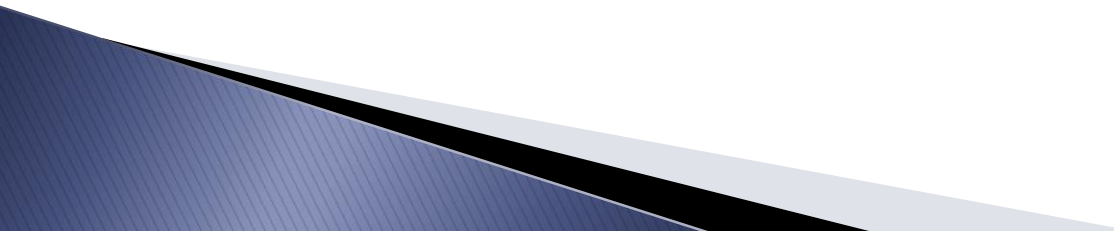


Case Study 1

Anna, a 75 year old was playing the piano one afternoon and she noticed the last 2 fingers on her right hand would not depress the keys. She thought nothing of it, closed the piano and stretched out on the couch for a nap. Her son came home from work at 8 p.m. to find his Mom still on the couch. He tried to awaken her, she opened her eyes but was unable to speak. It was determined at arrival to hospital she had had a left hemisphere stroke.

After 3 weeks in hospital, she is transferred to the Rehabilitation Unit. The 2 week followup Interdisciplinary Conference report gives you the following information:


- ▶ she is a one person moderate assist standing pivot transfer – frequent cuing is required
- ▶ she has severe right side neglect & some right side visual impairment
- ▶ she has some memory impairment for recent events
- ▶ she is continent of bowels, continent of bladder during the day but not overnight

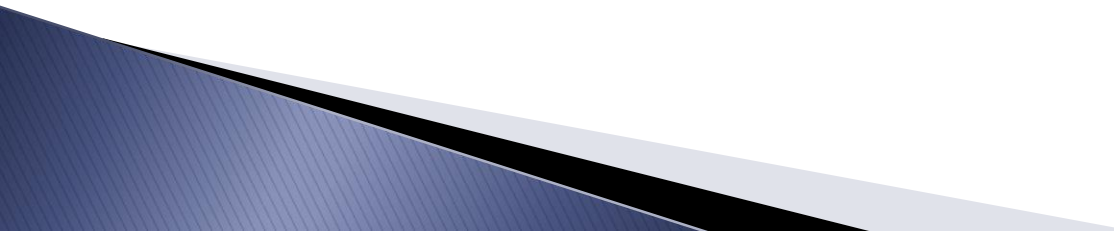
1. What issues are putting Anna at risk?
 2. What challenges are there to Anna going home?
 3. What support services / professionals would assist with your planning for Anna to return home?
- 

Case Study 2

Frank has had a stroke that has left him with aphasia and right sided hemiplegia. He does understand all conversation, using yes & no reliably. He has been on a pureed diet for his dysphagia. He uses a wheelchair for mobility & is a one person standing pivot transfer. He has experienced some urinary continence issues recently.

Frank has been a resident in your Long-Term Care home for 2 years. He is less eager to participate in his care, is taking less interest in events that are happening in the home & at times refuses to answer questions or participate in care.



1. What issues are putting Frank at risk?
 2. What are you observing for and what interventions might you implement for Frank?
 3. What challenges are there to determining the cause of Frank's reluctance to attend events & participate in his care?
 4. What support services / professionals would assist you in this situation? Who is part of Frank's care team?
- 

RESOURCES



<http://strokenetworkseo.ca>

STROKE RESOURCES

This chart is divided into two sections:

- 1. Resources for stroke survivors and their caregivers/families*
- 2. Resources for health care providers.*

CLIENT/FAMILY RESOURCES		
RESOURCE	DESCRIPTION	WHERE TO ACCESS
Amy's Speech & Language Therapy Inc.	A website that provides free downloads of aphasia resources.	Amy's Speech & Language Therapy Inc http://www.amyspeechlanguagetherapy.com/communication-boards.html
Aphasia Institute (Toronto) Aphasia Centre (Ottawa)	Web-based resource providing information and tools to support adults with aphasia and their families. To access free downloadable resources from The Aphasia Institute, go to https://www.aphasia.ca/shop/ and navigate to box <i>If you work or live in Ontario you may be eligible for free downloads</i> of our products. Complete the form and instructions will be emailed.	The Aphasia Institute at http://www.aphasia.ca/ The Aphasia Centre http://aphasiaottawa.org/
Aphasia Group	Belleville program for persons living with the effects of stroke in the community who are experiencing aphasia. Groups are facilitated by a speech-language pathologist.	Community Care for South Hastings (613) 969-0130
Community-Based Exercise Programs for People with Stroke	Brochure designed for persons living with the effects of stroke and families who are living in the community to assist them in determining if a community-based exercise program will meet their needs. Brochure is based on the provincially developed <i>Guidelines for Community-Based Exercise Programs for People with Stroke</i> .	Stroke Network of Southeastern Ontario website under Best Practice & Education at http://strokenetworkseo.ca/best-practice-education/guidelines-recommendations
Family Caregivers Voice	Family Caregivers Voice (FCV) is a family caregiver-led group promoting family caregivers' local support groups and encouraging self-advocacy through education. FCV also advocates for changes to the health care system which would improve the life of caregivers. The FCV website includes a video presentation on The Stages of Caregiving.	Family Caregivers Voice Family Caregivers Voice

