Stroke (1 of 2)
- Stroke is the ________________ cause of death in the United States.
- It is common in geriatric patients.
- More men than women have strokes.
  -- Strokes are more likely fatal in ________________.

Stroke (2 of 2)
- Other contributing factors include family history and race.
- Revolutionary treatments are available for stroke.
  -- Many hospitals are certified stroke ________________.
  -- Rapid transport is vital.
- Seizures and altered mental status (AMS) may also occur.

Seizures
Seizures may occur as a result of:
- A recent or an old head injury
- A brain tumor
- A ________________ problem
- A genetic disposition

Altered Mental Status (AMS)
Possible causes of AMS include:
- Intoxication
- Head injury
- Hypoxia
- Stroke
- Metabolic disturbances
  -- ________________ varies widely

Brain Structure and Function
The Spinal Cord
Common Causes of Brain Disorder (1 of 2)
● Many different disorders can cause brain dysfunction and can affect ____________ or voluntary muscle control.
● If problem is caused by heart and lungs, entire brain will be affected.
● If problem is in the brain, only that portion of brain will be affected.

9 Common Causes of Brain Disorder (2 of 2)
● Stroke is a common cause of brain disorder and is treatable.
● Seizures and altered mental status are other causes of brain disorder.
● The brain is sensitive to changes in ____________ , glucose, and temperature.
  – Significant change in any one of these levels will result in a neurologic change

10 Headache (1 of 6)
● One of the most common complaints
● Can be a symptom of another condition or a ____________ condition on its own
● Most headaches are harmless and do not require emergency medical care.

11 Headache (2 of 6)
● Sudden, severe headache requires assessment and transport.
  – If more than one patient reports headache, consider carbon ____________ poisoning.
● Tension headaches, migraines, and sinus headaches are the most common.
  – Not medical emergencies

12 Headache (3 of 6)
● Tension headaches are the most common:
● Caused by muscle contractions in the head and neck
● Attributed to stress
● Pain is usually described as squeezing, ____________, or as an ache.

13 Headache (4 of 6)
● Migraine headaches are the second most common:
● Thought to be caused by changes in blood ________________
Thought to be caused by changes in blood size in the base of the brain.

- Pain is usually described as pounding, throbbing, and pulsating.
- Often associated with visual changes
- Can last for several hours or days

14 Headache (5 of 6)
Sinus headaches:
- Caused by pressure that is the result of fluid ____________ in the sinus cavities
- Patients may also have cold-like symptoms of nasal congestion, cough, and fever.
- Prehospital emergency care is not required.

15 Headache (6 of 6)
- Serious conditions that include headache as a symptom are ______________ stroke, brain tumors, and meningitis.
- You should be concerned if the patient complains of a sudden-onset, severe headache or a sudden headache that has associated symptoms.

16 Emergency Medical Care: Headache
- Most headaches are harmless and do not require emergency medical care.
- You should be concerned if the patient complains of:
  – A sudden-onset, severe headache
  – A sudden headache with ______________, seizures, AMS, or following trauma

17 Emergency Medical Care: Migraine
- Always assess the patient for other signs and symptoms that might indicate a more serious condition.
- Apply high-flow oxygen, if tolerated.
- Provide a darkened, ______________ environment.
- Do not use lights and sirens during transport.

18 Cerebrovascular Accident and Stroke
- Cerebrovascular accident (CVA)
  – Interruption of ______________ flow to an area within the
Interruption of __________________ flow to an area within the brain that results in the loss of brain function

- Stroke
  - The loss of brain function that results from a CVA

19 3 Causes of a CVA
- Thrombosis: Blockage of a vessel by a thrombus (blood clot) which forms at a narrow area.
- Embolism: Blood clot or plaque travels through a blood vessel until it _________________ in the brain, blocking blood flow.
- Hemorrhage: Rupture of a blood vessel.

20 Thrombosis Caused CVA

21 Embolism Caused CVA

22 Hemorrhage Caused CVA

23 Hemorrhage Caused CVA

24 Hemorrhagic Stroke (1 of 2)
- Accounts for 13% of strokes
- People at high risk include those experiencing stress or __________________ .
- People at highest risk are those who have very high blood pressure.
- Results from bleeding in the brain
  - Arterial rupture

25 Hemorrhagic Stroke (2 of 2)
- Cerebral hemorrhages are often fatal.
- An ___________________ is a swelling or enlargement of an artery due to weakening of the arterial wall.
- Some people are born with aneurysms.
- Berry aneurysms are a common cause of hemorrhagic strokes in healthy, young people.
  - Presents as the “worst headache of their life”
  - Causes a subarachnoid hemorrhage

26 Ischemic Stroke (1 of 2)
- Most common, accounting for more than 80% of strokes
● Results from an embolism or thrombosis
● Results when blood flow to a particular part of the brain is ____________________ by a blockage inside a blood vessel
● Thrombosis
  – Clotting of the cerebral arteries
● Cerebral embolism
  – Blockage by a clot formed elsewhere in the body

27  Ischemic Stroke (2 of 2)
● Symptoms may range from nothing at all to complete paralysis.
● ____________________ in the blood vessels is often the cause.
● Plaque forms inside the walls of the blood vessels and may obstruct blood flow.
● Eventually, it causes complete occlusion of an artery.

28  Signs and Symptoms of Stroke
● Left Hemisphere
  – Aphasia: Inability to ____________________ or understand speech
  – Receptive aphasia: Ability to speak, but unable to understand speech
  – Expressive aphasia: Inability to speak correctly, but able to understand speech
● Right Hemisphere
  – Dysarthria: Able to understand, but hard to be understood

29  Other S/S of CVA
1  ● Alterations in consciousness
   ● Paralysis
   ● Loss of speech or ____________________ speech
   ● Unilateral blindness
   ● Drooling
   ● Facial drooping
2  ● Seizures
   ● Headache
   ● Unequal Pupils
   ● ____________________ blood pressure
• Dizziness
• Other S/S of increased intracranial pressure

30 □ Stroke Mimics:
• Hypoglycemia
• __________________________ state
• Subdural or epidural bleeding
• Intoxication

31 □ Assessing the Stroke Patient
• Primary assessment
  – Check and care for __________________________.
  – Obtain history if possible.
  – Administer oxygen and manage airway.
• Focused history and physical exam
  – Perform neurologic exam.
  – Check all 4 __________________________ for movement and strength
  – Utilize the Cincinnati Stroke Scale

32 □ Cincinnati Stroke Scale (1 of 2)
• __________________________ droop
  – Ask patient to show teeth or smile
  – Abnormal if asymmetrical
• __________________________ drift
  – Ask pt to close eyes and hold both arms out with palms up
  – Abnormal if arms do not move equally

33 □ Cincinnati Stroke Scale (2 of 2)
• __________________________
  – Ask patient to say “the sky is blue in Cincinnati” or something similar
  – Abnormal if words are slurred or confused

34 □ Emergency Medical Care for Stroke
• Patient needs to be evaluated by computed topography (CT).
• Recognizing the signs and symptoms of stroke can shorten the delay to CT.
Treatment needs to start within ________________ hours of onset.

– Use of “clot buster” medications
– Document times carefully

Careful what you say

35 Emergency Medical Care for Stroke

For suspected stroke patients, physicians in the ED need to determine whether there is bleeding in the brain.

Notify the hospital regarding the last time the patient was known to be ________________ their current signs and symptoms of stroke.

36 Emergency Medical Care for Stroke

_______________ therapy and methods to mechanically remove the blood clot may reverse stroke symptoms and even stop the stroke if given within 3 to 6 hours.

Transport to a designated stroke center.

37 Baseline Vital Signs

Excessive bleeding in the brain may slow ________________ and cause erratic respirations.

Blood pressure is usually ________________ .

Excessive bleeding in the brain may cause changes in pupil size and reactivity.

38 Transport Considerations

Place the patient in a comfortable position.
– Usually on one side
– Paralyzed side down and well protected

_______________ patient’s head about 6".

Continue giving oxygen and monitor vitals.

39 Transient Ischemic Attack (TIA)

A TIA is a “_______________.”

Stroke symptoms go away within 24 hours.

Every TIA is an emergency.
- TIA may be a warning sign of a larger stroke.
- Patients with possible TIA should be evaluated by a physician.

40  Seizures
- **Seizures**: neurologic episode caused by the a surge of __________ activity in the brain
- A seizure, or convulsion, is a temporary alteration in consciousness.
- Account for up to _______________ % of EMS calls
- In the United States, it is estimated that 2-3 million people have epilepsy.
- **Epilepsy**: Tendency to have repeated episodes of seizure activity.

41  Types of Seizures
- Generalized (Tonic-Clonic) seizure
- Absence seizure
- Partial (Focal) seizure
- 
- 

42  Generalized Seizure
- Results from abnormal electrical discharges from __________ areas of the brain.
  - Usually involves both hemispheres
- Characterized by sudden loss of consciousness and a generalized, severe __________ of all muscles.
  - Lasts several minutes or longer

43  Generalized Seizure
- Affects all parts of body
- _______________ : sensation before convulsion
- Convulsion
  - loss of consciousness
  - tonic phase (rigidity)
  - clonic phase (rhythmic jerking)
    - incontinence
    - ineffective breathing
- Postictal phase-exhaustion, drowsiness

44  Partial (Focal) Seizure (1 of 2)
Simple partial seizure:
- No change in the patient’s __________________ of consciousness
- May have numbness, weakness, dizziness, visual changes, or unusual smells/tastes
- May have some twitching or brief paralysis

Partial (Focal) Seizure (2 of 2)
Complex partial seizure:
- Altered mental status
- Results from abnormal discharges from the __________________ lobe of the brain
- Lip smacking, eye blinking, isolated jerking
- Patients also may experience unpleasant smells or visual hallucinations, exhibit uncontrolled fear, or perform repetitive physical behavior.

Absence Seizure
- Loss of consciousness without loss of __________________ tone.
- Brief lapse of attention manifested by staring and no apparent response to anyone
- Most common in children
- Last for seconds
- Patient fully recovers with a brief lapse of memory
- Formerly called petit mal

Characteristic of Seizures
- May occur on one side or spread throughout the whole body (generalized)
- Usually last 3 to 5 minutes, followed by period of unconsciousness known as __________________ state
- Patient may experience an aura.
- Seizures recurring every few minutes without the person regaining consciousness or that last longer than 30 minutes are known as status epilepticus.
**Causes of Seizures**
- Congenital (epilepsy)
- High fevers
- Problems in the brain
- Metabolic disorders
- Chemical disorders (poison, drugs)
- Sudden high fever
- (Low blood sugar)

**Recognizing Seizures**
- Cyanosis
- Abnormal or absence of breathing
- Possible injury
- Loss of bowel and bladder control
- Severe muscle twitching
- Post seizure state of unresponsiveness with deep and labored respirations

**Postictal State**
- Patient may have labored breathing.
- May have : weakness on one side of the body.
- Patient may be lethargic, confused or combative.
- Consider underlying conditions.
  - Hypoglycemia
  - Infection

**Management of Seizures (1 of 2)**
- Remove from harm. Protect from injury.
- Don’t forcibly the patient.
- Roll patient on side.
- After seizure:
  - Assess ABC’s
  - Clear airway
  - Oxygen
  - Assist ventilations as needed
- Lower body temperature if febrile seizure
Management of Seizures (2 of 2)

- Never insert anything in patient’s mouth!
- Obtain History
  - Ask about seizure history and medications
  - Phenobarbital, Depakote, Tegretol, Topamax and Dilantin most common
- Obtain blood ______________ level if authorized
- Physical exam
  - Look for trauma caused by seizure
- Monitor N/V and vital signs

When to Encourage Treatment and Transport

- If patient’s ______________ seizure.
- If patient has not taken meds recently.
- If seizures are prolonged or different from usual.
- If patient had ______________ seizures.
- Any signs of trauma, hypoxia, aspiration, or other serious condition

Status Epilepticus

- Defined as 2 or more seizures without intervening periods of ______________.
- Immediate life threat.
- Assist breathing.
- Rapid transport.
- Request paramedic backup.

Coma

- Coma-state of unconsciousness from which patient cannot be ______________
- Coma=Immediate life threat
- Management
  - ABC’s before investigating
  - Control c-spine if trauma known or suspected
  - Look for cause

Investigating Cause of Coma

- After ABC’s, investigate cause using DERM
- D=_________________________ of coma
• E=Eyes  
• R=Respiratory Pattern  
• M=Motor function

57 Investigating Cause of Coma

• Vital Signs  
  – Shock?  
  – Increased ________________?  
  – Arrhythmias  
• Head to Toe Exam  
  – Injuries?  
  – Snake bites? Insect stings?  
  – Drug “tracks”  
• Examine scene for clues

58 Altered Mental Status (AMS)

1 • Hypoglycemia  
• Hypoxemia  
• ________________  
• Drug overdose  
• Unrecognized head injury  
• Delirium

2 • Brain infection  
• Body temperature abnormalities  
• Brain tumors  
• Glandular abnormalities  
• ________________  
• Psychological disorders

59 Assessing a Patient

With AMS (1 of 2)

• Same assessment process  
• Patient cannot tell you reliably what is wrong.  
• Obtain blood glucose level if allowed  
• Be vigilant in reassessment.  
• Monitor for changes or deterioration.

60 Assessing a Patient
With AMS (2 of 2)
- Use AVPU scale to classify severity.
- Consider underlying conditions.
- Monitor for depressed ________________.
- Ensure that basic airway maneuvers are followed.
- Provide prompt transport to hospital while monitoring the patient.

61 Signs and Symptoms of
Brain Disorders
- Many different disorders can affect:
  - Level of consciousness
  - __________________________
  - Voluntary muscle control

62 Geriatric Needs
- Brain shrinks with age.
- Always consider __________________________ conditions.
- Elderly are at higher risk for central nervous system illnesses and injuries.

63 Pediatric Needs
- Children can have AMS caused by:
  - Strokes
  - __________________________
  - Other brain emergencies
- Treat in the same way as adults.
- Seizures are often febrile.
- Transport to the hospital.