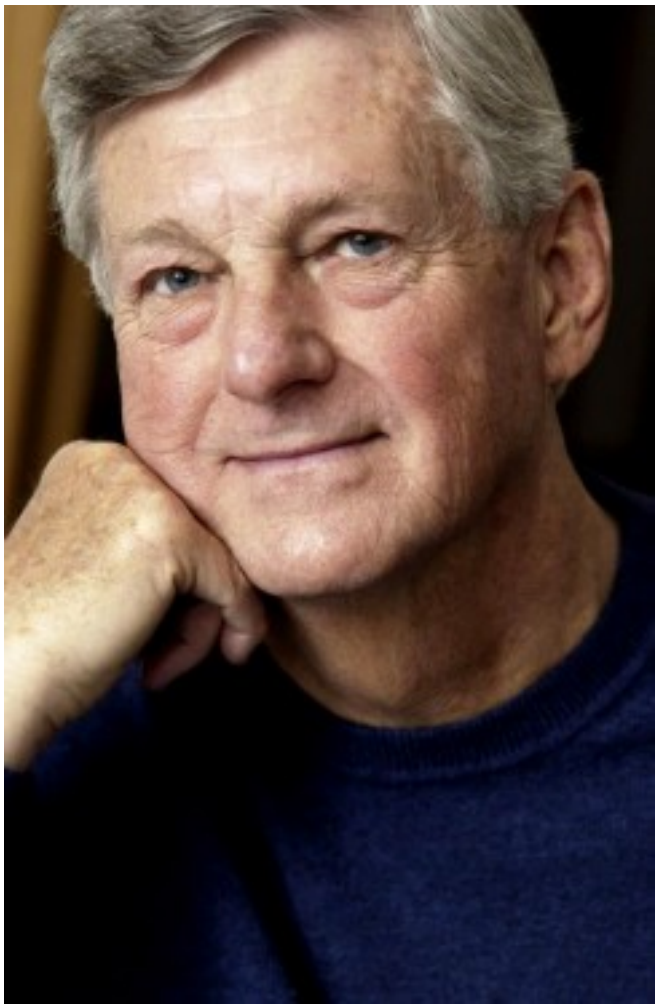
Cerebral Vascular Accident (CVA)



John Gates, 59 years old

Primary Concept
Perfusion
Interrelated Concepts (In order of emphasis)
1. Stress 2. Coping 3. Clinical Judgment 4. Patient Education 5. Communication 6. Collaboration

UNFOLDING Clinical Reasoning Case Study: STUDENT

Cerebral Vascular Accident (CVA)

History of Present Problem:

John Gates is a 59-year-old male with a history of diabetes type II and hypertension who was at work when he had sudden onset of right-sided weakness, right facial droop, and difficulty speaking. He was transported to the emergency department (ED) where these symptoms continue to persist. It has been one hour from the onset of his neurologic symptoms when he presents to the ED. You are the nurse responsible for his care.

Personal/Social History:

John lives with his wife in their own home in a small rural community. He owns a hardware store where he remains active and involved in the day-to-day operations. His wife insists on being by his side and talking to John despite John's frustration in not being able to answer her questions. His wife reports that the past week he has been complaining of episodes where his heart felt as if it was beating irregularly and fast but then resolved. His wife also states that he has been complaining of pain in his right foot the past week. John has been trying to quit smoking the past month and has been using a nicotine patch. His wife reports that he does not regularly check his blood glucose and eats what he wants. He is 6 feet tall and weighs 250 pounds (113.6 kg/BMI of 33.9).

What data from the histories are RELEVANT and has clinical significance to the nurse?

RELEVANT Data from Present Problem:	**Clinical Significance:**
Sudden onset of right sided weakness, facial droop, difficulty speaking Increased agitation and confusion to place and time 30 minutes passed from onset of symptoms to presentation to the emergency department	These symptoms are manifestations of a potential cerebral embolism or hemorrhagic event. Right sided symptoms can show the stroke affected the left side of the brain When administering tPA, time is of the essence. You have 60 minutes from the time the patient arrived to the ED to administer tPA to the patient.
RELEVANT Data from Social History:	**Clinical Significance:**
Wife will not leave John alone and continues to ask questions despite John not being able to answer her. Nicotine patch user Pain on his right foot for a week	John is not answering questions because he is irritable and is experiencing aphasia. Check to see if the patient is wearing a nicotine patch Do an assessment on the patient's foot

Patient Care Begins:

Current VS:	**P-Q-R-S-T Pain Assessment (5th VS):**	
T: 99.2 F/37.3 C (oral)	**P**rovoking/Palliative:	Unable
P: 118 (irregular)	**Q**uality:	
R: 20 (regular)	**R**egion/Radiation:	
BP: 198/94	**S**everity:	
O2 sat: 99% room air	**T**iming:	

What VS data is RELEVANT and must be recognized as clinically significant by the nurse?

RELEVANT VS data:	**Clinical Significance:**
Pulse 118 Blood pressure 198/94 O2 sat 99%	This heart rate is too high. A common reason for embolic stroke is unrecognized or untreated atrial fibrillation. Get an EKG This blood pressure is too high. This can disrupt blood flow to the brain and cause a hemorrhagic stroke. The patient is not hypoxic. Patient is experiencing confusion for another reason.

Current Assessment:	
GENERAL APPEARANCE:	Appears anxious–he is aware and appears to be concerned about changes in neuro status
RESP:	Breath sounds clear with equal aeration bilaterally, nonlabored respiratory effort
CARDIAC:	Pink, warm & dry, no edema, heart sounds irregular–S1S2, telemetry rhythm is atrial

	fibrillation, pulses strong, equal with palpation at radial/pedal/post-tibial landmarks
NEURO:	Is anxious, restless, and agitated, speech is currently slurred and difficult to understand, facial droop present on right side, pupils equal and reactive to light (PEARL), both right upper extremity (RUE) and right lower extremity (RLE) notably weak (3/5) in comparison to left, which is strong (5/5), right pronator drift present, unable to hold right arm up, right visual deficit cut present
GI:	Abdomen soft/non-tender, bowel sounds audible per auscultation in all 4 quadrants Able to swallow saliva
GU:	Voiding without difficulty, 700 mL urine clear/yellow,
SKIN:	Skin integrity appears intact, right foot not assessed at this time

What assessment data is RELEVANT that must be recognized as clinically significant to the nurse?

RELEVANT assessment data:	**Clinical Significance:**
Patient appears anxious	High anxiety can cause an increase in BP. Try to use therapeutic communication, education, and nonpharmalogical interventions to calm the patient.
Atrial fibrillation	Confirms irregular heart rate which can cause an embolic stroke.
Confused to place and shy he is in the hospital, notably anxious, restless, agitated, speech is slurred and difficult to understand, facial droop on right side, pupils equal and reactive to light, both right upper extremity and right lower extremity are weak in comparison to left, right pronator drift, unable to hold right arm up, right visual deficit	These symptoms all align with a left hemisphere CVA.
Able to swallow saliva	Patient is not at high risk for saliva aspiration.

Cardiac Telemetry Strip:

Interpretation:
Atrial fibrillation
Clinical Significance:
Unrecognized or untreated atrial fibrillation is a common reason for an embolic stroke.

Radiology Reports: Head CT

What diagnostic results are RELEVANT and must be interpreted as clinically significant by the nurse?

RELEVANT Results:	**Clinical Significance:**
No abnormalities noted, no mass, no bleed, no shift present	This rules out a hemorrhagic event but not an embolic stroke.

Lab Results:

Complete Blood Count (CBC)	**Current:**	**High/Low/WNL?**	**Previous:**
WBC (4.5-11.0 mm 3)	6.8	WNL	7.9
Hgb (12-16 g/dL)	14.8	WNL	16.1
Platelets(150-450x 103/ µl)	228	WNL	201
Neutrophil % (42-72)	71	WNL	79

What lab results are RELEVANT and must be recognized as clinically significant by the nurse?

RELEVANT Lab(s):	**Clinical Significance:**	**TREND: Improve/Worsening/Stable:**
The CBC looks normal but the results are still relevent.	A CBC is a routine lab used to gather information about the health of the patient.	Stable

Basic Metabolic Panel (BMP)	**Current:**	**High/Low/WNL?**	**Previous:**
Sodium (135-145 mEq/L)	133	Low	139
Potassium (3.5-5.0 mEq/L)	4.1	WNL	4.5
Glucose (70-110 mg/dL)	222	High	128
Creatinine (0.6-1.2 mg/dL)	1.5	High	1.1
Coag			
PT/INR (0.9-1.1 nmol/L)	1.1	WNL	n/a

What lab results are RELEVANT and must be recognized as clinically significant by the nurse?

RELEVANT Lab(s):	**Clinical Significance:**	**TREND: Improve/Worsening/Stable:**
Sodium 131	Patient is taking an ACE inhibitor which can cause low	Improving/stable

	sodium.	
Glucose 222	Patient is a diabetic. Patient will need a sliding scale. Need to get this level under control.	Improving
Creatinine 1.5	Creatinine is elevated and need to get the patients previous base levels and trend to assess for chronic renal insufficiency from diabetes and hypertension. Monitor urine output.	Improving/stable

Lab Planning: Creating a Plan of Care with a PRIORITY Lab:

Lab:	Normal Value:	Why Relevant?	Nursing Assessments/Interventions Required:
Creatinine **Value:** **1.5**	**RED FLAG: >1.5**	This elevated creatinine can be a sign of kidney issues or damage.	Assess intake and output, fluid restriction, assess for signs of retention or edema, get daily weights

Clinical Reasoning Begins…

1. What is the primary problem your patient is most likely presenting?

Patient is exhibiting manifestations of a CVA of the left hemisphere. This finding of atrial fibrillation points to an embolic stroke.

2. What is the underlying cause/pathophysiology of this primary problem?

There are hemorrhagic strokes and ischemic strokes. Hemorrhagic strokes occur due to ruptured blood vessels leaking blood into the brain. An ischemic stroke occurs when blood flow to the brain is cut off. Ischemic strokes may be caused by a thrombus or an embolus. A thrombotic stroke develops over time in the arteries and is caused by atherosclerosis. Symptoms with a thrombotic stroke are gradual. When a thrombus breaks off and blocks blood flow to the brain, it is an embolic stroke. Onset of symptoms with

this type of stroke are sudden. With an ischemic stroke, it is possible to reverse the brain damage that occurs from lack of oxygen using tPA. This medication must be administered within three hours of the onset of symptoms for the greatest chance of preventing permanent symptoms. Atrial fibrillation can cause blood to coagulate and clot which can cause an embolism.

(Relate initial manifestations to the pathophysiology of the primary problem)

Pathophysiology of Primary Problem:	**Rationale for Manifestations:**
Patient appears anxious Atrial fibrillation Confused to place and shy he is in the hospital, notably anxious, restless, agitated, speech is slurred and difficult to understand, facial droop on right side, pupils equal and reactive to light, both right upper extremity and right lower extremity are weak in comparison to left, right pronator drift, unable to hold right arm up, right visual deficit	Anxiety, restlessness, and agitation can be caused by the patient's increased heart rate and blood pressure. Confusion can be caused by the lack of blood flow. Facial dropping is caused by nerve damage. Hypertonia can cause malfunction of normal muscle functioning. Visual deficits can be caused by pressure or lesion on the optic nerve. Atrial fibrillation can cause coagulation which can cause a clot to form and can cause the patient to have an ischemic stroke.

Collaborative Care: Medical Management

Care Provider Orders:	**Rationale:**	**Expected Outcome:**

Establish peripheral IV	IV needed to give medications.	Patent IV established
12 lead EKG stat	Assess the patient's afib and monitor for complications.	HR normal sinus <100 bpm
Labetalol 10-20 mg IV prn every 15 minutes to keep SBP 160-180	Beta blocker that can lower BP and will also cause arterial vaso dilation which impacts afterload.	Systolic BP between 160-180
CT head stat	Rules out hemorrhagic CVA	Diagnose hemorrhagic or ischemic stroke
Cardiac monitor continuous	Assess the patient's heart rate and rhythm	No further complications. Heart rate and rhythm within normal limits
NPO	Decrease the risk of aspirations due to dysphagia.	Patient will not aspirate
Alteplase IV dose per pharmacy (if CT negative for bleed)	This is a clot buster which can treat a blood clot.	Blood clot dissolved.

PRIORITY Setting: Which Orders Do You Implement First and Why?

Care Provider Orders:	Order of Priority:	Rationale:
1.Establish peripheral IV 2.Labetalol 10-20 mg IV prn every 15" to keep SBP 160-180 3.CT head stat 4.Cardiac monitor continuous 5. Alteplase IV (if CT negative for bleed)	1. Ct head 2. Establish IV access 3. Alteplase IV 4. Labetalol 5. Cardiac monitor	1. Rule out hemorrhagic stroke to give alteplase 2. Must have IV access to administer medication 3. Vital to give clot buster as soon as possible for best patient outcome 4. Bring down BP 5. Monitor heart rate and rhythm for complications

Medication Dosage Calculation:

Medication/Dose:	Mechanism of Action:	Volume/time frame to Safely Administer:	Nursing Assessment/Considerations:
Labetolol **20 mg IV push** (5 mg/mL vial)	Blocks the stimulation of beta 1 adrenergic receptors. Does not affect beta 2 receptor sites. Decreases BP and heart rate.	**IV Push:** **Volume every 15 sec?** **0.5 mL**	Assess BP and HR before administering. SBP <90 and HR <60 Change positions slowly Contraindicated in CHF, bradycardia of heart block. Use with caution in diabetics and liver disease

Medication Dosage Calculation:

Medication/Dose:	Mechanism of Action:	Amount to Safely Administer:	Nursing Assessment/Considerations:
Alteplase 0.9 mg/kg IV over 60 minutes not to exceed 90 mg	Fibrinolytic agent. Converts plasminogen to proteolytic enzyme plasmin which lyses fibrin and fibrinogen.	**Weight: 113.6 kg** Amount to administer: 102.24 mg	Perform neuro assessment q15 minutes for the first hour of infusion Check for signs of bleeding Monitor BP q15 minutes for the first hour of infusion. Monitor for intracranial hemorrhage Discontinue is symptoms of adverse reaction

Collaborative Care: Nursing

3. What nursing priority(ies) will guide your plan of care? *(if more than one-list in order of PRIORITY)*

Priority for this patient is to get a CT scan, establish IV access, and administer Alteplase to bust out the clot and allow blood flow back into the brain. This action can reverse the effects of the stroke and not allow as much permanent damage.

4. What interventions will you initiate based on this priority?

Nursing Priority:	**Nursing Interventions:**	**Rationale:**	**Expected Outcome:**
1. Ct head 2.Establish IV access	1.Prepare pt for CT 2.Establish access	1.Quicker the CT, quicker the administration of clot buster	Ct will be completed
3. Administer Alteplase	3.Administer medication	2.Establish access to administer medication	Patient will have an IV
4. Frequent neuro checks, monitoring of BP, and monitoring HR and rhythm	4.Frequent rounding	3.Quick administration of medication will save neurons	Medication will be administered in a timely manner
5.Seizure pads 6.NPO	5.Apply pads 6.Do not give anything by mouth	4.Ensuring the patient is stable and is not worsening 5.Increased ICP can cause seizures, preemptive precaution	No abnormalities No seizure activity
		6.Prevent aspiration	No aspiration

5. What body system(s) will you assess most thoroughly based on the primary/priority concern? 6. What is the worst possible/most likely complication to anticipate?

Neurologic – increased ICP and seizure

7. What nursing assessments will identify this complication EARLY if it develops?

Increased ICP, neurological deficits worsening, seizure. Neuro assessment

8. What nursing interventions will you initiate if this complication develops?

Protect the patient and contact the doctor

9. What psychosocial needs will this patient and/or family likely have that will need to be addressed?

10. How can the nurse address these psychosocial needs?

The patient and his family may be scared and needs their questions answered. Answering any questions they might have and using therapeutic communication.

Evaluation: 1 Hour Later…Alteplase has just completed and the following clinical data is collected:

Current VS:	**Most Recent:**
T: 99.0 F/37.2 C (oral)	**T:** 99.2 F/37.3 C (oral)
P: 74 (regular)	**P:** 118 (irregular)
R: 16 (regular)	**R:** 20 (regular)
BP: 178/86	**BP:** 198/94
O2 sat: 96% room air	**O2 sat:** 99% room air

Current Assessment:	
GENERAL APPEARANCE:	Resting comfortably, appears in no acute distress
RESP:	Breath sounds clear with equal aeration bilaterally, nonlabored respiratory effort
CARDIAC:	Pink, warm & dry, no edema, heart sounds regular with no abnormal beats, pulses strong, equal with palpation at radial/pedal/post-tibial landmarks
NEURO:	Right facial droop no longer present, speech is not as slurred, weakness persists in both RUE and RLE but is stronger (4/5) than before tPA started
GI:	Abdomen soft/non-tender, bowel sounds audible per auscultation in all 4 quadrants
GU:	Voiding without difficulty, urine clear/yellow
SKIN:	Right heel has 1x1 cm stage II pressure ulcer with redness of the entire heel that is blanchable, no drainage noted

1. What clinical data is RELEVANT and must be recognized as clinically significant by the nurse?

RELEVANT VS Data:	**Clinical Significance:**

Pulse 74 BP 178/86	HR is within normal limits, assess heart rhythm BP has lowered – continue to watch
RELEVANT Assessment Data:	**Clinical Significance:**
Right facial droop no longer present, speech not as slurred, weakness persistent in RUE and RLE but is stronger than before Alteplase Right heel 1x1 cm stage II pressure ulcer with redness of heel this is blanchable	Improvement in neurological assessment indicated perfusion and blood flow to the brain was restored and an improving status Impaired skin integrity and breakdown must be documented. Blanching shows blood flow not impaired to the site

Cardiac Telemetry Strip:

Interpretation:
Normal sinus rhythm
Clinical Significance:
Continue to monitor as patient may switch back and forth and may need anti-coagulation

1. Has the status improved or not as expected to this point?

Improved as expected after the administration of Alteplase

2. Does your nursing priority or plan of care need to be modified in any way after this evaluation assessment?

No, continue to assess neuro

3. Based on your current evaluation, what are your nursing priorities and plan of care?

Transfer patient to ICU. Continue to do neuro assessment every 15 minutes as well as assess VS and heart rhythm.

Effective and concise handoffs are essential to excellent care and if not done well can adversely impact the care of this patient. You have done an excellent job to this point, now finish strong and give the following SBAR report to the ICU nurse who will be caring for this patient:

Situation:
Name/age: John Gates 59 years old **BRIEF summary of primary problem:** **59 year old make was at work when sudden onset of right sided weakness, facial droop, difficulty speaking occurred. CT confirms embolic CVA with no bleed. Initial assessment showed confusion to place and why he is at hospital. Patient was anxious, restless, agitated, speech was slurred and right sided facial drooping, PERLA, RUE and RLE weakness, right pronator drift and right sided visual deficit present. Patient was experiencing afib with HR 110 and BP 198/94. Labetalol given 20 mg IV. Alteplase given 102.24 mg IV.**
Background:
Primary problem/diagnosis: CVA **RELEVANT past medical history:** **No prior history of CVS. History of diabetes mellitus type II and hypertension**
Assessment:

Vital signs: Vital signs are currently stable. **RELEVANT body system nursing assessment data: Neuro assessment showed improvement to symptoms.** **How have you advanced the plan of care? Frequent assessments and Labetalol and Alteplase given.** **Patient response: Patient responding well to treatment and showing improvement.** **INTERPRETATION of current clinical** **status (stable/unstable/worsening): Stable and improving**
Recommendation:
Suggestions to advance plan of care: **Continued frequent monitoring of neuro, VS, and heart rhythm. Set limits with wife.**

Education Priorities/Discharge Planning

1. What educational/discharge priorities will be needed to develop a teaching plan for this patient and/ or family?

Control of blood glucose levels. Educate on diet and medications. Control of hypertension. Educate on low sodium diet and medication.

2. How can the nurse assess the effectiveness of patient and/or family teaching and discharge instructions?

Use the teach back method and answer any questions the patient and family may be having.

Caring and the "Art" of Nursing

1. What is the patient likely experiencing/feeling right now in this situation?

The patient may be feeling fearful and anxious and feel like he lacks information. Educating the patient and using therapeutic communication to assess the patient's feelings is beneficial to the patient's experience.

2. What can you do to engage yourself with this patient's experience and show that he matters to you as a person?

Offer self as a form of therapeutic communication to allow the patient the opportunity to express his emotions.

Use Reflection to THINK Like a Nurse

Reflection-IN-action (Tanner, 2006) is the nurse's ability to accurately interpret the patient's response to an intervention in the moment as the events are unfolding to make a correct clinical judgment.

1. What did I learn from this scenario?

I learned about CVA treatment and about what a patient might be experiencing during a hospital visit for this diagnosis. I also learned about medications and priority of treatment.

2. How can I use what has been learned from this scenario to improve patient care in the future?

I can take this information and implement it in a real-world scenario. I will know my priority action to care for this patient and will also know about the treatment for a patient who comes in with an ischemic stroke. I will also be able to use therapeutic communication to help the patient through this tough time and educate them on their condition.