Ischemic Stroke with Increased ICP
2/11/08

Discipline: NR220 **Course:** Crisis Care
Created By: Nancy Ciskey, ARNP , Carol List, BSN
Expected Simulation Run Time: 40" **Debrief /Guided Reflection Time:** 40"
Location: ER

Admission Date: today **Today's Date:** today

Brief Description of Patient:

Name: Julie Wilson **Gender:** F
Age: 48 **Race:** C
Weight: 99 # **Height:** 66"
Religion: Methodist **Major Support:** husband
Phone:

Allergies: Iodine
Immunizations: up to date
Attending Physician/Team:

PMH: HTN, Diabetes – type II, hypercholesterolemia,
½ ppd smoker

History of Present illness: Patient brought into ER by husband after she collapsed at home this am. Initially was slightly confused. Complaining of severe right temporal lobe headache and blurred vision. Husband reports that she was complaining of headaches and blurred vision that "came & went quickly" over the past 3-4 weeks.

Social History: unremarkable

Primary Diagnosis: R/O CVA
Surgeries/Procedures: ORIF ankle fx 12 years ago

Psychomotor Skills Required prior to simulation:

Assessment
IV skills
Neuro checks
IV Med administration

Cognitive Skills Required prior to Simulation: i.e. independent reading (R), video review (V), computer simulations (CS), lecture(L)

Unit V CVA Worksheet (R)

Simulation Learning Objectives:

1. Perform the 5 components of a neurologic assessment

2. Prioritize & provide initial care and treatment of the patient experiencing ischemic stroke and increased
intracranial pressure.

Fidelity

Setting/Environment

- ***ER*** initially
- **ICU** after transfer from ER

Simulator Manikin/s Needed:

SimMan

Props:

Equipment attached to manikin:

- **Saline Lock inserted**
- **D_5 1/2NS fluids** available on cart with tubing
- **Cardiac monitor attached**
- **ID band: Julie Wilson**
- **Allergy band: Iodine**

Equipment for faculty to disperse:

- **orders**
- **CT results / lab results**
- **cue cards**
- **maintenance rTPA (pharmacy call to pickup)**
- **NS label to cover up $D_5$1/2NS if students catch compatibility error**

Equipment available in room

- **Fluids** $D_5$1/2NS; N
- **Secondary IV tubing**
- **IVPB Tubing**
- **IV Pump**
- **02 delivery devices type** NC @ bedside; nonrebreather mask available on cart
- **Crash cart with airway devices and emergency medications**

Medications and Fluids

- **IV Fluids:** $D_5$1/2NS & NS
- **IVPB:** rTPA (50mL bag available after transfer to ICU. Labeled as:
  rTPA 36.45 mg / 50 mL) over 60”
- **IV Push:** rTPA (50mL vial labeled:
  Recombinant altaplase 1mg/mL)
  Give over 1”
  Labetalol 10mg over 2” IVP

Diagnostics Available

- **Labs** CBC with ESR, chem. panel, coag
- **X-rays (Images)** CT w/o contrast Rt. temporal lobe ischemia
- **12-Lead EKG** order in ER, returns NSR

Documentation Forms

- **Physician Orders**
- **Admit Orders**
- **Flow sheet**
- **Medication Administration Record**
- **Neurological Record**
- **Standing (Protocol) Orders**
- **Kardex (may consider in future)**
- **NIH Stroke Scale**

Recommended Mode for simulation: programmed

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- **Meds:** rTPA (50mL vial labeled: Recombinant altaplase 1mg/mL)
  rTPA (50mL bag available after transfer to ICU. Labeled with rTPA 45.95mg / 50 mL)
  Labetalol (5mg/ml vial)

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Roles / Guidelines for Roles

- **Student Nurse**
- **Husband (student w cue card)**
- **CNA**
- **Resource Nurse**
- **Medication / Treatment Nurse**
- **Observer/s (5) to switch roles after patient transferred to ICU**
- **Physician – actual instructor**

Important information related to roles: (10 students)

5 students participating throughout ER , then switch with observers and 5 other students will participate in ICU.

Critical Lab Values:

All normal lab work except for elevated glucose on ER lab work.

Physician Orders:

See orders

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Student Information Needed Prior to Scenario:

- **Has been oriented to simulator**
- **Understands guidelines /expectations for scenario**
- **Has accomplished all pre-simulation requirements**
- **All participants understand their assigned roles**
- **Has been given time frame expectations**

Report students will receive before simulation:

Time: see information contained on simulation worksheet (Unit V) and computer screen at start of simulation

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References, Evidence-Based Practice Guidelines, Protocols, or Algorithms used for this scenario: (site source, author, year, and page)

Urden, 2008 Unit 5, Chapters 17 & 18

Med-Surg Notes, FA Davis Co.

Gahart

Clinical Practice Guideline Baystate Health System

Scenario Progression Outline

Frame (approximate)	Manikin Actions	Expected Interventions	May use the following Cues:
Initial State	T 99, P 102, R 22, BP 174/104 $Sp0_2$ 88% ***ER Neuro Results:*** ***Eyes open spontaneous*** ***Confused verbal response*** ***Motor: obeys commands*** ***Severe weakness Rt arm*** ***Severe weakness Rt leg*** ***Pupils: 4 bilateral***	Apply Oxygen / NC @ 2-6L to keep sats above 92% Initial assessment with vitals & neuro checks Delegate vital signs to CNA	**Role member providing cue:** *Husband* **Cue:** What does that 88 mean?

Hypoxia Recovery	Recovery from hypoxia, increased to 98% sats over 2 minutes. *"Water…please" verbalized to cue students to keep pt NPO* Stroke Hypertension Trend started …. increasing BP and P ***Click on CT scan, labs, IV as students do to record items*** ***Altaplase will move to next frame*** **FACULTY TO MOVE STUDENTS AFTER rTPA 10% DOSE GIVEN FOR REPORT & CHANGE ROLES**	Initial Stroke Care Handler • increase HOB • neuro assessment • vital signs • NPO • Notify Dr. Obtain Dr's orders & carry out • notify lab • notify EKG • Start IV • notify radiology • increase HOB • seizure precautions • rTPA initial dose	**Role member providing cue:** *faculty* **Cue:** • *increase HOB* • *neuro asses* • *vital signs* • *NPO* • *Notify DR* **Cue:** • *Notify radiology* • *Notify lab* • *Notify EKG* • *start IV* • *maintain HOB* • *seizure precautions* • *rt-PA 10%*
Tx ICU	Increase temp to 100.9 Increase RR to 24 Increase BP to 210/124 ***While roles are***	Acetaminophen pr Baseline vitals & neuro check (coma scale) Notify Dr. of increase	**Role member providing cue:** *faculty* **Cue** • *head to neutral alignment* • *Avoid hip flexion*

	switching & students in other room: ***1) Raise HOB >30*** ***2) Flex head to side*** ***3) sticky note on manikin left leg & arm with abnormal flexion*** ***ICU Neuro Results:*** ***Eyes open spontaneous*** ***Confused verbal response*** ***Motor: obeys commands*** ***Severe weakness Rt arm*** ***Severe weakness Rt leg*** ***Pupils: 4 bilateral*** ***AFTER Students complete Head-to-toe exam that includes vitals & neuros click on Head-to-to exam to move to next frame***	BP Standing orders approve for labetalol IVP – trend will start to decrease BP & P slightly over 5" rTPA maintanence given ***Increased ICP Handler:*** click on items as students prioritize the care • avoid flexion • decrease environmental stimuli • decrease HOB to 30 • assess respiratory status • vital signs/neuro signs	• *Decrease HOB to 30* • *vital signs* • *neuro check* • *labetalol IVP* • *rt-PA 90%* • *acetaminophen*
HOT	**"Hot…."** **Don't click on Labetalol until faculty calls from**	Can discuss T with patient but priority is hypertension ***Labetalol 10mg IVP over 2"***	**Role member providing cue:** *faculty* **Cue:** *labetalol*

	pharmacy to come and pick up the maintenance dose of r-TPA		
ICU	***Change to smaller pupil on the left with a dilated pupil on the right*** ***Need Cheyne-Stokes respirations - click on Resp & alternate trending from 4 – 40 over 40 seconds!*** ***ICU Neuro Results:*** ***Eyes open to speech*** ***Inapprop. words*** ***Abnormal flexion*** ***Severe weakness Rt arm*** ***Severe weakness Rt leg*** ******Raise volume of breathing to loud so students clue in on breathing!***	Continue to assess vital signs and neuro checks. Notify Dr. of Cushing's triad of • widened pulse pressure • bradycardia with PVC's • Cheyne Stokes respiration Orders will be obtained to prep for surgery ***END OF SCENARIO***	**Role member providing cue:** *faculty* **Cue:** • *Change to nonrebreather mask* • *vital signs* • *neuro signs* • *Notify Dr. of changes!* *Husband:* what's wrong with her. She looks funny.

Debriefing / Guided Reflection Questions for this Simulation:

(Remember to identify important concepts or curricular threads that are specific to your program)

1. What were your primary concerns in this scenario?

2. Did you miss anything in getting report on this patient?

3. Did you have sufficient knowledge/skills to manage this situation?

4. What were your primary nursing diagnoses in this scenario?

5. What nursing interventions did you use, what outcomes (NOC) did you measure?

6. Where is your patient in terms of these outcomes now?

7. Did you prioritize your care in ER for a possible stroke client? (Neuro signs, vital signs, raise HOB to 30, oxygen administration, NPO, notify Dr.)

8. Did you prioritize your care in ICU for increased intracranial pressure? (vital signs, neuro signs, HOB 15 -30, assess airway patency and breathing, Oxygen via rebreather mask, head in neutral alignment, avoid flexion of hips & neck, decrease environmental stimuli)

9. What did you do well in this scenario?

10. If you were able to do this again, what would you do differently?

Complexity – Simple to Complex

Suggestions for changing the complexity of this scenario to adapt to different levels of learners:

Unit 5 Neurologic Alterations
Cerebrovascular Accident Simulation Worksheet

Outcomes: The student will be able to:

1. Return demonstrate the five components of a Neurologic assessment.

2. Identify diagnostic procedures used in assessment of the client with a CVA.

3. Describe the etiology and pathophysiology of a CVA.

4. Identify clinical manifestations of a client with a CVA.

5. Prioritize treatment and nursing management of a client with a CVA.

READINGS: Priorities in Critical Care Nursing, pg 327-344 & 348-361.

REVIEW: NIH Stroke Scale pg 351

Case Study

Julie Wilson is a 48 yr old, Caucasian, female, brought to the emergency room by her husband after collapsing at home. He reports she has complained of headaches and blurred vision that "came & went quickly" over the past 3-4 weeks. On assessment, Julie is slightly confused.

- What other information do you need about Julie at this time?
- What Labs/diagnostics would be helpful in differential diagnosis of a CVA?
- What nursing interventions must be taken immediately to prevent further Neurologic deterioration?

- Describe the difference between an ischemic and a hemorrhagic stroke; include the clinical manifestations of a stroke at different regions of the brain:
- Briefly describe laboratory/ diagnostic tests that may be used in assessment of the CVA client:
- Identify the priority nursing diagnoses:
- Summarize Nursing Management for the client with a CVA:

Unit 5 Neurologic Alterations
Cerebrovascular Accident Simulation Worksheet

I. Ischemic Stroke

- Identify the etiologies of an ischemic stroke .What is the difference between an emboli and a thrombotic stroke.
- Explain the effects of a local insult verses a global insult.
- Outline the medical management of a patient with an ischemic stroke and the use of thrombolytic therapy.

I. Subarachnoid hemorrhage

- Identify the 2 types of subarachnoid Hemorrhages (SAH).
- How does a cerebral aneurysm develop and what are the consequences. Review the Hunt and Hess classification system for grading cerebral aneurysms.
- AVM: Explain how blood is shunted from the arterial side into the venous side bypassing the capillary system and the effects this has on the cerebral vascular system.
- List the signs and symptoms of an SAH.
- List the three major complications of a SAH.
- Address the use of SAH precautions, then briefly discuss the management for (a) rebleeding, (b) vasospasm, (c) hyponatremia, and (d) hydrocephalus.

a. Rebleeding

Surgical aneurysm clipping

Surgical AVM excision
Embolization
Pharmacologic therapy

b. Cerebral vasospasm

Triple H Therapy: Hypertensive, hypervolemic, hemodilution
Oral nimodipine
Transluminal cerebral angioplasty

c. Hyponatremia

d. Hydrocephalus

III. Intracerebral hemorrhage

- Describe intracerebral hemorrhage (ICH) and it's etiology. How does an intracerebral hematoma develop? Risk factors?

- How does the client with ICH usually present (signs of increasing intracranial pressure)?

- Outline the surgical and nonsurgical treatment of an ICH.

a. Surgical

b. Nonsurgical

Davis Hall Community Hospital

Physician Orders

MR#:

Date/Time	Orders
	t-PA Infusion Standing Orders – Emergency Department or ICU
	Physician to determine candidacy for IVt-PA 1. Time patient last seen without stroke symptoms:_____ 2. NIH Stroke Scale: _____Time t-PA infusion begun: _____ 3. Inclusion Criteria – *minimum are in bold and must be met:* _____ **Age ≥ 18 years and < 85 years** _____ **Stroke symptoms began < 3 hours before infusion** _____ **Clinical diagnosis of acute ischemic stroke causing a measurable neurological deficit** _____ **Patient/family informed of possible benefits and risks of t-PA.** _____ Stroke diagnosis made by MD with stroke expertise _____ Head CT scan to be assessed by radiologist and neurologist with documentation of lack of intracranial bleeding **EXCLUSION CRITERIA:** _____ DNR on admission _____ Minor or rapidly improving stroke symptoms (e.g. ataxia Alone, sensory loss, dysarthria alone, minimal weakness) _____ Seizure at the time of stroke onset _____ History of intracranial hemorrhage or dementia _____ Evidence or intracranial or subarachnoid hemorrhage on pretreatment CT _____ Clinical presentation suggestive of subarachnoid hemorrhage, even with normal CT _____ Baseline CT scan evidence of extensive ischemic changes. This includes early evidence of sulcal effacement, herniation, mass effect, or edema _____ NIH Stroke Scale Score greater than 20-22 _____ SBP ≥ 185 and DBP ≥ 110 mm Hg _____ Awakening with stroke and had been sleeping ≥ 3 hours _____ Recent myocardial infarction or post infarction pericarditis _____ Active internal bleeding _____ Intracranial surgery, head trauma or previous stroke within 3 months _____ History of GI or urinary tract bleeding within 21 days _____ Major surgery or truncal trauma within 14 days _____ Recent invasive procedure such as, but not limited to lumbar puncture or arterial puncture at a noncompressible site _____ Abnormal blood glucose <50 or > 400 mg/dl _____ PT > 15 seconds or PTT is elevated in pts without recent use of anticoagulants or heparin _____ Known bleeding diathesis – Plt Ct <100,000 mm^3 pt has received unfractionated heparin with elevated PTT greater than upper limit of normal for laboratory, patient has received low molecular weight heparin within 24 hours, current or recent use of oral anticoagulants with elevated PT > 15 seconds or INR > 1.7 _____ Emergent car for bleeding complication not readily available

Julie Wilson
SimMan

Physician Orders

Patient Name: Julie Wilson **DOB: 9/22/xx** **MR #:1234567** **Age: 48** **Gender: female** **Height: 66”** **Weight: 99#**	**Diagnosis: Headache, nausea, blurred vision; R/O CVA** **Allergies: Iodine**

Date	Time	Physician Order and Signature
Today	now	Oxygen: titrate to keep Sats >92%
		VS with neuro checks q15” initially
		D_5 1/2NS @ TKO
		Chem panel, CBC with sed rate, coag panel now
		EKG; CT head w/o contrast – call results
		NPO
		Seizure precautions
		Keep HOB elevated to 30^o at all times
		AFTER CALLING UP WITH RADIOLOGY REPORT GIVE THEM THE FOLLOWING ORDERS
		Standing orders / rt-PA
		RPTA 0.9mg/kg now after CT results obtained; give 10% IV push initially; after transfer to ICU administer remaining 90%
		Transfer to ICU after orders implemented and stable
		Dr. G. Miller

Julie Wilson
SimMan

Physician Orders

Patient Name: Julie Wilson **DOB: 9/22/xx** **MR #:1234567** **Age: 48** **Gender: female** **Height: 66”** **Weight: 99#**	**Diagnosis: Headache, nausea, blurred vision; R/O CVA** **Allergies: Iodine**

Date	Time	Physician Order and Signature

Julie Wilson
MR#1234567

Davis Hall Community Hospital
Medication Record

Allergies: IODINE

Start / Stop	Medication and Strength	Route & Frequency	Scheduled Times	Date 2/11/08	Date 2/12/08	Date 2/13/08

STAT AND ONE TIME ORDERS

2/11/08	rTPA 0.9mg/kg IVP *Give 10% initially over 1"*	IVP	now			
2/11/08	rTPA 0.9mg/kg IV *Give remaining 90% over 60"*	*IVP*	now			

PRN

Start / Stop	Medication and Strength	Route & Frequency	Scheduled Times	Date 2/11/08	Date 2/12/08	2/13/08
2/11/08	Labetalol 10mg **May Repeat wit 10-20mg q15" PRN S>180 & DBP>105**	IVP over 2"	Prn SBP>180 DBP>105 X2 5-10" apart			
2/11/08	Acetaminophen 650mg	PR PRN	Q6H PRN T>99.6R			

Recopied By:_____

Checked By:

Davis Hospital
815 N. Walnut, Hutchinson, KS 67501
Daily Reports

Patient ID: 1234567 DOB: 9/22/xx Age: 48 Sex: Female Location: DH218
Patient: Julie Wilson Att. Physician: Miller, G

COAGULATION

Collected Specimen	Results Today 0545	Reference Range
Prothrombin Time	10.8	9.5 – 11.6 seconds
INR	0.82	0.7 – 1.8
Partial Thromboplastin	23.2	23.0 – 33.0 seconds
Fibrinogen	257.3	200.0 – 450.0 mg/dl
D-Dimer Advanced	0.23	0.0 – 2.7 mg/L

M1: Elevated D-Dimer values are useful in the diagnosis of DIC, especially in conjunction with clinical information and other diagnostic tests. For patients with low clinical probability of PE or DVT, D-Dimer results less than 1.0 mg/L have excellent negative predictive value in excluding a diagnosis of Acute PE or DVT. However, a thromboembolic event cannot be excluded when D-Dimer values are greater than 1.0 mg/L.

Davis Hospital
815 N. Walnut, Hutchinson, KS 67501
Daily Reports

Patient ID: 1234567 DOB: 9/22/xx Age: 48 Sex: female Location: DH218
Patient: Julie Wilson Att. Physician: Miller, G

Chemistry

Collected Specimen	Results	Reference Range
Sodium	139	136 - 145 MMOL/L
Potassium	3.8	3.5 - 5.1 MMOL/L
Chloride	102	98 - 107 MLOL/L
PCO_2	28.8	21.0 – 32.0 MMOL/L
Anion Gap	8.2	8. 0 – 16.0 MMOL/L
Glucose	315 H	74 – 106 MG/DL
BUN	12	7 – 18 MG/DL
Creatinine	0.8	0.6 – 1.0 MG/DL
BUN/Creatinine Ratio	15.0	9.1 – 17.0
Calcium	9.1	8.5 – 10.1 MG/DL
Bilirubin Total	0.85	0.00 1.00 MG/DL
Total Protein	7.1	6.4 – 8.2 GM/DL
Albumin	4.1	3.4 – 5.0 GM/DL
Globulin	2.8	2.3 – 3.5 GM/DL
A/G Ratio	1.5	1.5 – 2.2 MG/DL
Alk Phos	85	50 – 136 U/L
ALT (SGPT)	57	30 – 65 U/L
AST (SGOT)	22	15 – 37 U/L
Magnesium	2.1	1.8 – 2.4 MG/DL

Davis Hospital
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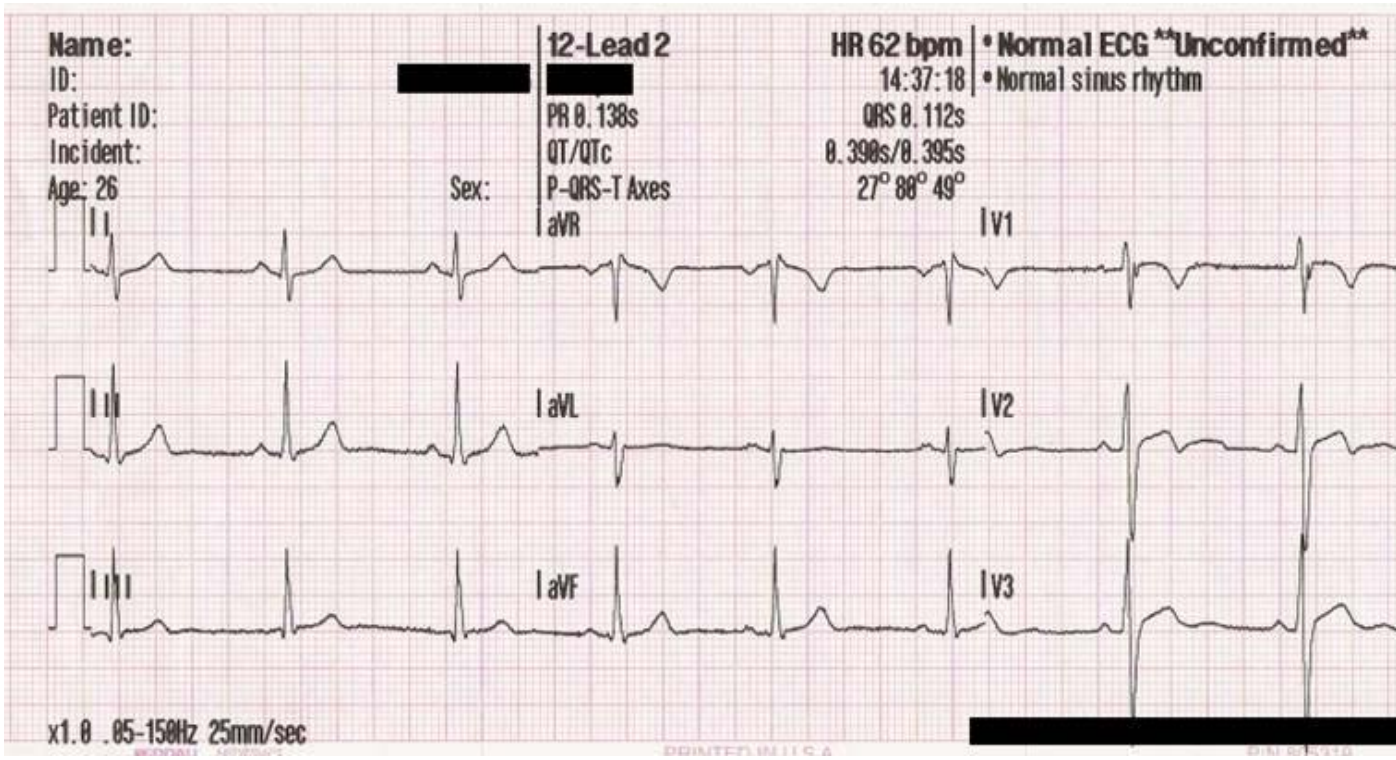
Daily Reports

Patient ID: 1234567 DOB: 9/22/xx Age: 48 Sex: female Location: DH218
Patient: Julie Wilson Att. Physician: Miller, G

Complete Blood Count

Collected Specimen	Results Today 0545	Reference Range
RBC	4.3 MMOL/L	3.8 – 5.2 MMOL/L
Hgb	13.2	11.7 – 16 g/dL
Hct	42%	35 – 47%
Mean cell hemoglobin (MCV)	88	80 – 95 mm^3
Mean cell hemoglobin (MCH)	27.6	27 – 31 pg/cell
Mean cell hemoglobin concentration	33.4	32 – 36 g/dL
WBC	7,200	5000 – 10,000 /μL
Reticulocyte counte	0.3%	0.5% - 0.2% of RBC's
Total iron binding capacity (TIBC)	320 mcg/dL	250 – 460 mcg/dL
Iron (Fe)	93	60 – 160 mcg/dL
Serum ferritin	98	10 – 150 ng/mL
Platelet count	323,000	150,000 – 400,000 mm^3
ESR	18.3 mm/hr	<20 mm/hr


Name:
ID:
Patient ID:
Incident:
Age: 26
Sex:
12-Lead 2
PR 0.138s
QT/QTc
P-QRS-T Axes
aVR
HR 62 bpm
14:37:18
QRS 0.112s
0.390s/0.395s
27° 88° 49°
• Normal ECG **Unconfirmed**
• Normal sinus rhythm
I
II
III
aVL
aVF
V1
V2
V3
x1.0 .05-150Hz 25mm/sec

Davis Hall

Hospital

Julie Wilson

DOCUMENTATION FORM:

Vital Signs:

Assessment Findings:

Medication Given: