STROKE & PREGNANCY: INDIVIDUALIZED CARE, INTERDISCIPLINARY COLLABORATION, AND EXCELLENT OUTCOMES, SIDE – BY – SIDE CASE STUDIES

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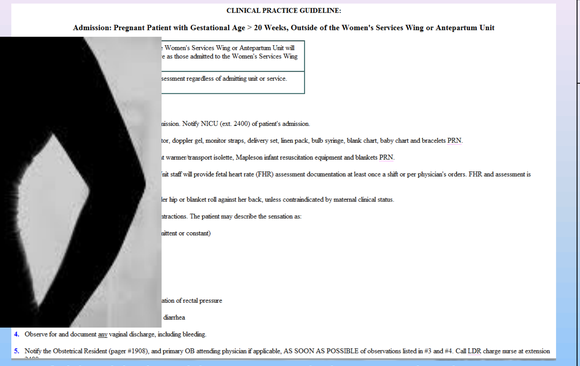


CLINICAL PRACTICE GUIDELINE:

Admission: Pregnant Patient with Gestational Age > 20 Weeks, Outside of the Women's Services Wing or Antepartum Unit

Women's Services Wing or Antepartum Unit will
e as those admitted to the Women's Services Wing

essment regardless of admitting unit or service.

ission. Notify NICU (ext. 2400) of patient's admission.

or, doppler gel, monitor straps, delivery set, linen pack, bulb syringe, blank chart, baby chart and bracelets PRN.

t warmer/transport isolette, Mapleson infant resuscitation equipment and blankets PRN.

it staff will provide fetal heart rate (FHR) assessment documentation at least once a shift or per physician's orders. FHR and assessment is

er hip or blanket roll against her back, unless contraindicated by maternal clinical status.

ractions. The patient may describe the sensation as:

ittent or constant)

tion of rectal pressure

diarrhea

4. Observe for and document any vaginal discharge, including bleeding.
5. Notify the Obstetrical Resident (pager #1908), and primary OB attending physician if applicable, AS SOON AS POSSIBLE of observations listed in #3 and #4. Call LDR charge nurse at extension

PURPOSE: The purpose of this side-by-side case study is to teach other rehabilitation professionals the unique care required when a mother experiences a stroke during pregnancy. Unusually, both patients were admitted to the Center for Rehabilitation at Wilmington Hospital (CRWH), Christiana Care Health System, in June, 2011. Their rehab stays overlapped nine days. Both mothers-to-be had excellent outcomes. This presentation received Institutional Review Board (IRB) approval by expedited review.

BACKGROUND: There is an increasing trend of stroke in pregnancy in the U.S. with risk estimated to be 13.1 -29.1 per 100,000 deliveries[2]. Pre-eclampsia or eclampsia, is a pregnancy-specific condition occurring after 20 weeks gestation that includes both hypertension and proteinuria .This condition is the most common cause of stroke during pregnancy. Contributing factors may include high gravidity or parity[2], physiologic changes of pregnancy, and also the general causes for stroke in young females such as artery dissection, arrhythmias, heart valve disease, cerebral vasculitis, arteriovenous malformations, migraine, moyamoya disease, and sickle cell anemia[2]. Pre-eclampsia affects 2-5% of pregnancies. Of these, approximately 33% will experience a stroke. Studies show that ischemic and hemorrhagic stroke-types occur at close frequency.

Table 1. Type and Causes of Antenatal Strokes

Cause of Stroke by Type	
Nonhemorrhagic	18 (60)
Ischemic arterial	13 (43)
Preeclampsia	2
Patent foramen ovale	1
Moyamoya disease	1
Undetermined cause	9
Cerebral venous thrombosis	3 (10)
Prothrombin variant	1
Carotid dissection	2 (7)
Hemorrhagic	12 (40)
Intracerebral hemorrhage	9 (30)
Eclampsia or preeclampsia	4
Arteriovenous malformation	1
Aneurysm	1
On LMWH for antiphospholipid syndrome	1
Undetermined cause	2
Subarachnoid hemorrhage	3 (10)
Aneurysm	2
Undetermined cause	1
Total	30

LMWH, low molecular weight heparin.
Data are n (%) or n.

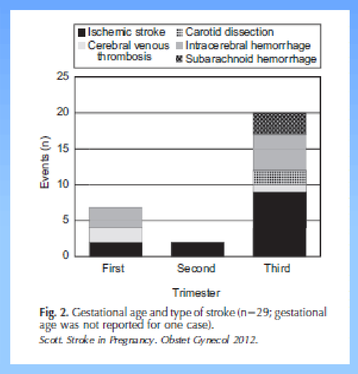


Fig. 2. Gestational age and type of stroke (n = 29; gestational age was not reported for one case).
Scott. Stroke in Pregnancy. Obstet Gynecol 2012.

Other risk considerations may include ethnicity, age, and body-mass-index (BMI). Pre-eclampsia is more common in African American women and Hispanic women than in white women. It is also more common in women over age 35 and in women with a BMI >35.

Stroke during pregnancy is 20% fatal. Significant disability occurs with 45% of those who survive and 30% are admitted for intensive rehabilitation services.

REFERENCES:
Crevetto, F., Somigliana, E., Peguero, A.& Figueras, F. Stroke during pregnancy and pre-eclampsia. *Women's health, 25*(6),425-432.
Kittner, S.J., Stern, B.J., Feeser, B.R., et al. (1996). Pregnancy ant the risk of stroke. *New England Journal of Medicine*, 335: 768-74.
Scott, C., Bewley, S., Rudd, A., et al. (2012). Incidence, risk factors, management, and outcomes of stroke in pregnancy. *American College of Obstetricians and Gynecologists*, *120*(2), 318-324.
Tetterborn, B. (2012). Stroke and pregnancy. *Neurologic Clinics*, *30*(3): 913-924.

Subject 1	VARIABLE	Subject 2
• 22 Years	• Age	• 34 Years
• 1	• Gravidity	• 3
• 0	• Parity	• 0
• 10.5	• # Weeks Gestation	• 32
• African American	• Ethnicity	• White
• Married	• Marital Status	• Never Married
• Very good, husband & mother (mother attended all therapies)	• Social Support	• Very good, mother & father-of-baby, friend (mother attended all therapies)
• Not Working	• Work Status	• Working Full-time
• Medicaid	• Insurance	• Blue Cross
• Non-smoker	• Smoking Status	• Non-smoker
• Did not use	• Alcohol status	• Did not use
• 22.78	• BMI	• 27.55
• Migraine Headaches	• Contributing Past Medical Hx.	• Carotid Artery Dissection
• **Stroke** (cerebral sinus thrombus, subarachnoid hemorrhage, left brain, right body involvement)	• **Impairment Group**	• **Stroke** (MCA, left brain, right body involvement)
• "To get home and to draw again."	• Patient's stated goal:	• "To take care of my child."
Admission Discharge	Functional Measures	*Admission Discharge*
• 46 62	• Motor FIM	• 27 58
• 28 30	• Social / Cognitive FIM	• 10 25
• 74 92	• Total FIM admit/discharge	• 37 83
• 18	• **FIM Change**	• 46
• 11 Days	• Length of stay	• 28 Days
• 1.6	• Length of stay efficiency	• 1.6

UNIQUE PROBLEMS / PLAN OF CARE HIGHLIGHTS

Nutrition: Weight Loss / Nausea & Vomiting --RD
Zofran prn & omeprazole daily; Prenatal vitamin, folate & thiamine; stagger medication administration, give meds when able to eat, give meds one-at-a-time 30 minutes apart; small frequent meals, fresh fruit & yogurt on all trays; Lactaid milk; ensure BID; ham & cheese sandwich @ HS; ginger ale

Constipation
Colace & Senokot; add Prunes with lunch

Bladder Management: Urinary Tract Infection
Macrobid BID, pregnancy risk B (do not give at full term)

Increased Intracranial Pressure/Headaches
Diamox; Tylenol Q4H

Vocational Deficit: Decreased R. hand strength (graphic artist) --OT
Thera putty, dexterity board & 2# dowel UB exercises for strengthening; improve coordination for graphic art with stylist / tablet with use of pencil and problem-solving worksheets –repeat to evaluate progress with executive function and legibility; threading small beads

Nose Bleeds: Anticoagulation Therapy –Lovenox
Ice & hold pressure; ocean spray prn

Seizure Prophylaxis
Keppra, pregnancy risk C –current research shows relative risk of major malformations was not increased in comparison to women with epilepsy

Global Aphasia –ST
Ready comprehension battery for aphasia, visual comprehension; used pictures of baby items

Impaired Mobility: Ambulation Dysfunction –PT
Ambulate with & w/o. MAFO to increase awareness; hemi-bar standing for wt. shifts

ADL / IADL dysfunction: trunk instability
Challenged sitting balance (fair-) improved to withstand max perturbations with dynamic sitting at mat edge reaching on therapy ball x all planes, max trunk rotation; day-2 made a 10 # simulated (sim) baby for patient to hold / practice mother activities, swaddling & diaper changes

Pregnancy Health: Ultra sound Q 3 days / fetal biophysical profile
Measures of healthy pregnancy –cord check, gestational age, amniotic fluid index, fluid volume, heart sounds / rate, fetal tone, fetal breathing & gross movement =8/8 with each exam; fetal heart tone s assessed QD except when biophysical profile done.

Therapists noted that hearing the fetal heart sounds motivated her.

DISCHARGE PLAN

Subject 1: Home with family and outpatient rehab services –PT, OT, & ST; scheduled appointment for high risk OB clinic in 10 days.

Subject 2: Home with family and home health care services ** home care company was not able to provide obstetrical care; 2-weeks away from scheduled C-Section.

DELIVERY

Subject 1: Vaginal delivery at 39.1 weeks; oxytocin used for induction; baby was treated with tactile stimulation and bulb suctioning; assessments were WNLs.

Girl
6lbs, 14.55 oz.
48.3 cm

Healthy

Subject 2: Scheduled C-section at 39 weeks; baby was treated with tactile stimulation and bulb suctioning; assessments were WNLs.

Boy
6lbs, 2.74 oz.
49.5 cm

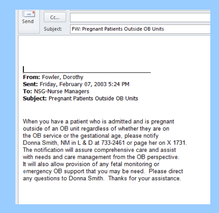
Healthy

RECOMMENDATION FOR CLINICAL PRACTICE

Women who are pregnant often hear their doctor say, "Call me if you have bleeding, regular uterine contractions, fluid leaking, or if your temperature is elevated to 100.4 or more."

Obstetrical practice should include an assessment for women who are at risk for stroke during pregnancy. Women who are identified at risk should be educated to recognize the signs and symptoms of stroke and to activate the emergency medical system by using 9-1-1.

Rehabilitation services improve outcomes. Acute in-patient rehabilitation programs should evaluate their resources to determine their capacity to care for pregnant women who have had a stroke. Special consideration is needed for obstetrical monitoring such as a daily check of fetal heart sounds and frequent biophysical profile measures by ultrasound. Clinical practice guidelines and administrative support are imperative.



Send | Cc... | Subject: FYI: Pregnant Patients Outside OB Units

From: Fowler, Dorothy
Sent: Friday, February 07, 2003 5:24 PM
To: NSG-Nurse Managers
Subject: Pregnant Patients Outside OB Units

When you have a patient who is admitted and is pregnant outside of an OB unit regardless of whether they are on the OB service or the gestational age, please notify Donna Smith, NM in L & D at 733-2451 or page her on X 1731. The notification will assure comprehensive care and assist with needs and care management from the OB perspective. It will also allow provision of any fetal monitoring or emergency OB support that you may be need. Please direct any questions to Donna Smith. Thanks for your assistance.

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