

Family Medicine Maternal and Newborn Clinical Care Guidelines

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**(Adapted from the Guide to OB Care at Zuni, 2002;
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GUIDE TO UNM Family Medicine MCH Care

The following guidelines are presented to enhance the quality of prenatal care and to provide uniformity in our approach to prenatal patients. However, these guidelines are not rigid, and may be modified as indicated for individual patients. For additional clinical guidelines refer to the UNM Maternal and Fetal Medicine protocols at http://hsc.unm.edu/som/obgyn/fetal_protocols.shtml

I. TRIAGE PREGNANCY TEST PROTOCOL

All women receiving pregnancy tests in our clinics are to be seen by a nurse or provider to review the results.

A. Negative pregnancy test

Determine if conception desired.

1. Conception desired

- Offer to schedule the patient for preconception counseling, which includes screening for diabetes, hypertension, rubella, substance abuse, STI's and other perinatal risk factors.
- Prescribe prenatal vitamins to supply folic acid.

2. Conception not desired

- Offer to schedule an appointment for contraceptive counseling, or per provider discretion may offer counseling at that time.
- Offer emergency contraception, foam, and/or condoms.

B. Positive pregnancy test

1. If planning to continue the pregnancy

- Do a brief overview of the problem list and current medicines to detect problems needing urgent evaluation (e.g. active ETOH abuse, use of teratogenic medicines, history of ectopic pregnancy, diabetes mellitus, desire for termination, etc.).
- Obtain prenatal lab work, and schedule first prenatal visit with provider of choice.
- Prescribe prenatal vitamins.
- Order dating ultrasound if indicated.

2. If undesired pregnancy

- Discuss options including pregnancy termination and adoption.
- Women may be referred for evaluation for medical abortion (if less than 10 weeks (70 days) EGA) to FMC Options/Ultrasound Clinic, Dr. Phillips or Dr. Hooper at Southeast Heights or Dr. Palley at 1209. They may be referred for surgical abortion/uterine aspiration up to 22 weeks as well as medication abortion at UNM Center for Reproductive Health (925-4455).

II. THE FIRST PRENATAL VISIT

The following outlines what should be covered at the first visit and is not meant as a comprehensive review of how to initiate prenatal care.

A. The History

1. General history can be obtained by following the prenatal flow sheet. Important points are:
 - Dating information and relationship to recent hormonal birth control
 - Use of medicines that may be contraindicated in pregnancy (e.g. ACE inhibitors)
2. Prenatal history
 - Emphasis on past history of gestational diabetes, preterm deliveries, and prior cesarean delivery
3. Tobacco, alcohol, and recreational drug abuse (see separate guidelines)

B. The Exam

1. General PE as indicated on the prenatal flow sheet
2. Important to note if elevated blood pressure suggesting chronic hypertension or a hypertensive disorder of pregnancy. Noting prior elevated blood pressures can be important to distinguish chronic hypertension from preeclampsia and gestational hypertension, especially if patient presents after 20 weeks estimated gestational age.
3. Pelvic exam. Documentation of cervical length and effacement can sometimes be useful if patient develops preterm labor later in pregnancy. For cultures, see Routine Lab section below.

C. The Paperwork

1. Complete all three pages of the prenatal flow sheet or use Powerchart Office.
2. Complete the Problem List section of the prenatal record; including documenting HIV, advanced maternal age counseling, triple screen testing, substance abuse screen, and list all relevant problems and your management plan. The problem list is an extremely useful way of keeping track of patients with numerous problems, especially when other providers see your patients. One needs to strike a balance of making the list complete without filling it too full of less important items.
3. Complete a WIC referral (if the patient doesn't already have one). You can check "poor diet" for lack of a better indication. WIC is a tremendous resource of information, nutritional counseling, breast and formula feeding assistance as well as financial help. All patients should be encouraged to go.
4. Schedule an ultrasound for dating if any question regarding menstrual dating due to unsure LMP, irregular periods, or use of hormonal contraception within four months of LMP. Women with history of a prior cesarean, diabetes, hypertension, or prior preterm deliveries should have a dating ultrasound even if reliable LMP. Some providers may want to send all patients for first trimester dating US as routine first trimester US has been shown to decrease proportion of women requiring postdates surveillance and induction. These are available at UNM

Family Medicine Center Wed. AM Ultrasound/Options Clinic and the recommended time is 7-11 weeks.

D. Patient Education

Typical topics are included on the checklist. Remember to discuss referral for amniocentesis, genetic counseling, and genetic ultrasound if indicated.

E. Follow -up

Low-risk patients have traditionally been followed every four weeks until 26-28 weeks, then every two weeks until 35-36 weeks, then weekly until 41 weeks, when post-dates testing begins. There are alternative appointment schedules that have demonstrated equivalent outcomes and allow less frequent appointments such as:

Multip: 12,20, 28, 34, 36, 38 ,40 ,41

Nullip: 12, 20, 25, 28, 31, 34, 36, 38, 40, 41

High-risk patients are usually followed more frequently: see the individual guidelines for gestational diabetes, preeclampsia, etc.

III. ALCOHOL AND DRUG SCREENING

Because of the high incidence of alcohol abuse, and potential devastating effects on the fetus, all prenatal patients should be screened. Research has shown that simply asking patients about their use has a very low sensitivity/specificity. Specific screens, which are used routinely in prenatal care, have much greater sensitivity. We have not standardized on which screen to use in FM prenatal practices, but encourage each practice to develop a plan for screening. Two screens are listed below:

A. 4P's substance abuse screen in pregnancy

1. *Have you ever used drugs or alcohol during **P**regnancy?*
2. *Have you had a problem with drugs or alcohol in the **P**ast?*
3. *Does your **P**artner have a problem with drugs or alcohol?*
4. *Do you consider one of your **P**arents to be an addict or alcoholic?*

A positive answer to any of the questions indicates a need for more in-depth screening.

B. T-ACE for alcohol abuse screening

1. **T** - *Does it take more than it used to for you to get high? (**T**olerance)?*
2. **A** - *Do you feel **A**nnoyed by people complaining about your drinking?*
3. **C** - *Have you ever felt the need to **C**ut down on your drinking?*
4. **E** - *Have you ever had a drink first thing in the morning (**E**ye-opener)?*

Question #1 has a weight of two; others have a weight of one. If the total equals 2 or more, this suggests a problem.

Patients identified with significant drug or alcohol problems may be offered referral to the Milagro project for counseling. Women requiring methadone or buprenorphine maintenance should receive their primary prenatal care through Milagro clinics which

are held at FMC on Tues AM, Wed PM and Thurs PM as well as SEH on Fri am. The FOCUS Clinic at UNM FMC on Thursday PM and SE Heights FM on Wed PM and Friday AM offer well child care to at-risk families in a model using case management services. The goal is to have a high proportion of the Milagro patients have continuity delivery by FMC residents, fellows or attendings.

IV. PRENATAL LABS – ROUTINE

A. First Visit

1. CBC
2. Blood Type and RH
3. Antibody Screen
4. Clean Catch UA & culture
5. Serology-TP AB for syphilis
6. Rubella Titer
7. HB_sAg
8. HIV
9. Hepatitis C antibody if high risk
10. HbA1c
11. Glucose random or fasting
12. GC/Chlamydia: urine or cervical specimen if also doing a pelvic exam
13. Pap smear when indicated based on age (not if under 21) and timing of last pap
14. Wet prep: We do not recommend routine wet prep collection. Collect if indicated.
(See below and discussion under STD's, BV, yeast and trich)

B. 24-28 week

1. One-hour Glucola (50 gm) (or alternative of 75 gm 2 hr GTT)
2. Hct

C. 35-37 Weeks

1. GBS culture
2. Repeat HIV and Hepatitis C if high risk (eg IVDA) and consider repeat GC/Chlamydia if at high risk for STDs. TP Ab is done on L & D admit therefore no need for repeat in 3rd trimester

V. PRENATAL LABS - AS INDICATED

- A. Genetic screening should be offered to **all** patients (document if declined). This may be a first trimester screen at UNM Women's Imaging or one of the private perinatal offices at 11-13 weeks or a quad screen or AFP-3 at 15-22 weeks gestation. Quad or AFP-3 are optimal at 15-17 weeks to allow time for additional testing prior to viability. Test is strongly recommended for patients with:
1. FH of anencephaly
 2. History of fetal anomaly
 3. History of neural tube defect
 4. Mothers with pregestational diabetes mellitus

5. Family history of Down's Syndrome

If the patient is considering termination in the case of confirmed anomalies, then testing before 18 weeks is important in terms of arranging a TAB prior to viability.

Cell free DNA allows direct testing of fetal DNA through a maternal blood specimen. This is currently an option for women who have advanced maternal age or are at higher risk based on first or second trimester screening. Studies are in process to determine if the sensitivity and specificity is high enough in low risk patients to use as a primary screening test however at this time that is not recommended.

- B. HIV: Part of routine prenatal labs but may be declined. No need for written consent in pregnancy.
- C. Cystic fibrosis screening: ACOG recommends offering (in a documented fashion) testing for the CF gene carrier status to all non-Jewish whites and Ashkenazi Jews, because those populations have a carrier frequency of 1 in 29. All patients should receive information about this test and have the test performed if desired by the patient.
- D. Other tests: may be ordered according to a patient's particular risk factors and complications such as earlier gestational diabetes screening, hepatitis C antibody, TSH etc. See individual guidelines.
- E. Wet prep: if patient is symptomatic, or high risk of preterm birth (previous preterm birth, multiple gestation).

VI. ULTRASOUNDS

- A. Dating ultrasounds from 7-12 weeks may be scheduled at the FMC's Wed morning Options / Ultrasound Clinic. If history of prior ectopic pregnancy or PID, order earlier ultrasound at approximately 6 to 7 weeks EGA. Obtaining first trimester ultrasound through this clinic improves resident training in first trimester ultrasound. Ultrasounds after 12 weeks may be obtained at Women's Imaging or New Mexico Sonographics. Women desiring first trimester genetic screening for trisomy 21 should be referred to Women's Imaging at UNM, or one of the perinatal practices in town. This ultrasound with measurement of nuchal translucency can **only** be done between 11 4/7 and 13 6/7 weeks. Women planning on this screening should have an earlier first trimester US at FPC if there is any question about the dating to ensure proper timing of the genetic ultrasound and serum marker test
- B. Anatomic Survey ultrasound: this is not required for most low risk patients, however, most patients desire this ultrasound and it is covered by third party payers. Women having First trimester screening will be referred for an anatomic survey to rule out neural tube defects (NTDs) since this is not tested for in the first trimester screen. The Quad 4 screen does determine the risk for NTDs.
- C. Genetic ultrasounds for advanced maternal age, history of anomalies in a prior pregnancy, abnormal first trimester screening, abnormal triple or quad screen, pregestational diabetes, or other indications should be through Genetics at UNM

Women's Imaging.

D. Order additional ultrasounds if:

1. Preterm labor in current pregnancy: order cervical length US.
2. History of preterm delivery in a prior pregnancy: should have cervical length at 16,18, 20 and 22 weeks with referral to cerclage if cervix is <2.5 cm. If nonspecific history it may be appropriate to screen at 16 and 20-22 weeks.
3. Late Term (41 0/7- 41 6/7 weeks): check AFI with each NST
4. Gestational diabetes (see Diabetes Protocol)
5. Antepartum hypertension: growth with dopplers q 4 weeks starting at 24-26 weeks (see protocol)
6. Intrauterine growth restriction: growth with Dopplers q 3-4 week u/s starting at diagnosis
7. Twin gestation: serial u/s q 3-4 weeks starting at 24 to 26 weeks with cervical length for Di/Di. If mono/di US q 2 weeks from 16 to 30 weeks alternating growth scans with cervical length and amniotic fluid determination to look for signs of Twin-Twin transfusion (TTT). The mono/di twins then have weekly AFI from 32 weeks as part of their antenatal surveillance
8. Other indications: e.g. size/dates discrepancy, uncertain presentation (may be referred to fetal testing for US for presentation), vaginal bleeding, etc.

If referring for Level II ultrasound at 18-20 weeks or for amniocentesis then order early ultrasound at UNM FMC to confirm dates (i.e. at 8-12 weeks) to avoid mistiming the amnio or level II ultrasound.

- E. To determine an EDC: Taking into consideration a sure LMP (regular periods with no SAB/TAB or birth control in 3 months prior to LMP), use the 8% Haddock rule, in which the LMP date must be within the 8% range in days. An example is 17-week ultrasound (17 wk X 7 = 129 days) and 8% of 129 gives a range of plus or minus 10.3 days. If the LMP date is outside this range then use the ultrasound date. For first trimester US, we generally use the EDD from the US, even with a sure LMP however all practices do not do this and an LMP c/w a first trimester US is acceptable. Care must be used in interpretation of third trimester ultrasound for dating purposes due to potential influence of fetal growth aberrations such as macrosomia or IUGR.

F. AFI Measurements in last half 3rd trimester (i.e.>32 weeks):

1. Oligohydramnios: 0 – 5cm
2. “Borderline” oligohydramnios: 5 – 7cm (controversial category)
3. Normal: 8 – 25cm
4. Polyhydramnios: >25cm

G. Ultrasound accuracy by EGA:

	<u>EGA</u>	<u>Accuracy</u>
Mean sac diameter	4.5-6wks	+/-7days
Crown rump length	6-12wks	+/-3-5 days

VII. NST/AFI/BPP

A. NSTs and AFI are recommended for:

CONDITION	NST	AFI	START AT
Late Term (≥ 41 weeks)	2 x q week	2 x q week	41 weeks gestation
Oligohydramnios	2 x q week	2 x q week	At diagnosis
Preeclampsia	2 x q week	2 x q week	At diagnosis
IUGR	2 x q week	2 x q week	At diagnosis
Pregestational HTN requiring medicines	2 x q week	q week	32 weeks
GDMA1 – diet controlled	2 x q week	q week	40 weeks
Pregestational DM or GDMA2-insulin or oral medicines	2 x q week	q week	32 weeks
DM/GDM – poor control	2 x q week	q week	30-32 weeks
Previous unexplained IUFD	2 x q week	q week	34 weeks
Renal disease/SLE/antiphospholipid antibody syndrome	2 x q week	q week	32weeks
Advanced maternal age over 40	weekly	weekly	36 weeks

B. Fetal testing is performed in the Fetal Testing area of OB triage at UNM or in private perinatology offices. To schedule fetal testing at UNM, please place a consult request note in the patient's chart using the following phrase =obantenataltesting*, completing information in the templated note including the indication and frequency of fetal testing. Then call OB triage to schedule the first fetal testing appointment. Patients will schedule subsequent appointments during their fetal testing appointments.

C. The following are recommendations regarding the interpretation of NSTs and biophysical profiles. The interpretations themselves are fairly straightforward; however, the appropriate follow-up can vary depending upon the specific clinical setting. For borderline test results, high-risk patients or situations, or any other time in which you are uncomfortable making a decision based upon these tests, we recommend consultation with Larry Leeman, Sarah Gopman, Nicole Yonke, or the Ob/Gyn service.

1. Nonstress Tests

An NST is reactive if:

- Two accelerations occur within a twenty-minute period;
- "Acceleration" is an increase in the FHR over the baseline that exceeds 15 beats per minute and has a duration of 15 seconds from the time it leaves the baseline until it returns. If <32 weeks ega then a 10 beat accel for 10 seconds meets criteria for an "acceleration".

- Accelerations are usually associated with fetal movement, but the verification of concomitant movement is not necessary to meet the requirements of a reactive NST.
- Total observation time is 40 minutes. If the test is nonreactive after twenty minutes, one can acoustic stimulate the baby and monitor again. If after the second twenty minutes it still does not meet criteria, then the test is done and labeled "nonreactive."

2. Biophysical Profile

The biophysical profile is an antepartum technique of assessing fetal well being that is performed with ultrasound. It may be used as the primary method of antepartum surveillance or used when a nonstress test has been nonreactive. It has an accuracy of detecting chronic fetal asphyxia and uteroplacental insufficiency comparable to the contraction stress test (CST), although there are situations in which a CST is needed, such as prolonged decelerations on a nonstress test. The biophysical profile can be inaccurate due to operator error or can give a false positive when a test occurs during a prolonged sleep cycle. The fetus is observed for thirty minutes and scored on four separate variables. (Observation for less than 30 minutes can give a falsely lower score.) For each variable the fetus should be given either zero or two points (see chart). It is not appropriate to give one point for an intermediate finding. Only eight points are from ultrasound testing, therefore if an NST is nonreactive then 8/10 will be the maximum number of points that can be given. If the score is less than 8/10 then a consultation should be obtained to determine if immediate delivery (induction or c-section), a contraction stress test, or a repeat biophysical profile is indicated.

BIOPHYSICAL PROFILE SCORING: TECHNIQUE AND INTERPRETATION*

BIOPHYSICAL VARIABLE	NORMAL SCORE	ABNORMAL (SCORE =0)
Fetal breathing movements	At least 1 episode of FBM of at least 20 sec duration in 30 minute observation.	Absent FBM or no episode of \geq 20 sec in 30 minutes.
Gross body movement	At least 2 discrete body/limb movements in 30 minute (episodes of active continuous movement considered as single movement)	One or no episodes of body/limb movements in 30 min.
Fetal tone	At least 1 episode of active extension with return to flexion of fetal limb(s) or trunk. Opening and closing of hand considered normal tone.	Either slow extension with return to partial flexion or movement of limb in full extension or absent fetal movement.
Reactive FHR	At least 2 episodes of FHR acceleration of \geq 15 beats/min and of at least 15 sec duration associated with fetal movement in 20 min.	Less than 2 episodes of acceleration of FHR or acceleration of $<$ 15 beats/min in 20 min.
Qualitative AFV ^a	AFI of \geq 5. Or vertical pocket $>$ 2cm	AFV \leq 5 or no vertical pockets of at least 2 cm

*FBM, fetal breathing movement; FHR, fetal heart rate; AFV, amniotic fluid volume: AF, amniotic fluid. Modification of the criteria for reduced amniotic fluid from < 1 cm to < 2 cm would seem reasonable (see Chamberlain, et al., 1984)

Table 7. Perinatal mortality within one week of biophysical profile by BPP score*

Test Score Result	Interpretation	PNM within 1 week without intervention	Management
10/10 8/10 (normal fluid) 8/8 (NST not done)	Risk of fetal asphyxia extremely rare	1/1000	Intervention for obstetric and maternal factors.
8/10 (abnormal fluid)	Probable chronic fetal compromise	89/1000	Determine that there is evidence of renal tract function and intact membranes. If so, delivery of the term fetus is indicated. In the preterm fetus < 34 weeks, intensive surveillance may be preferred to maximize fetal maturity. ³⁰
6/10 (normal fluid)	Equivocal test, possible fetal asphyxia	Variable	Repeat test within 24 hr
6/10 (abnormal fluid)	Probable fetal asphyxia	89/1000	Delivery of the term fetus. In the preterm fetus < 34 weeks, intensive surveillance may be preferred to maximize fetal maturity. ³⁰
4/10	High probability of fetal asphyxia	91/1000	Deliver for fetal indications.
2/10	Fetal asphyxia almost certain	125/1000	Deliver for fetal indications.
0/10	Fetal asphyxia certain	600/1000	Deliver for fetal indications.

*Modified from Manning FA, Dynamic ultrasound-based fetal assessment: The fetal biophysical score⁸⁰

Liston R, Sawchuck D, Young D, Society of O, Gynaecologists of C, British Columbia Perinatal Health P. Fetal health surveillance: antepartum and intrapartum consensus guideline. *Journal of obstetrics and gynaecology Canada : JOGC = Journal d'obstetrique et gynecologie du Canada : JOGC*. Sep 2007;29(9 Suppl 4):S3-56.

VIII. FM OB CONSULTATION GUIDELINES

Guidelines for L&D collaboration between FM and Ob/Gyn Services at the University of New Mexico

A. Level 1 – Informal Interactions

1. Normal labor and vaginal delivery of term infant (vertex presentation)
2. Fetal monitoring (internal or external)
3. Outlet or low operative vaginal delivery (if FM attending privileged)
4. Repair of 3 ^o (if FM attending privileged)
5. Gestational Diabetes, controlled by diet or oral medications
6. Induction/Augmentation of labor in term patient
7. Pre-eclampsia without severe features
8. Chronic hypertension (not requiring intrapartum IV antihypertensive medicines)
9. Chorioamnionitis

B. Level II – Formal consultation with FM OB Fellowship trained faculty with operative privileges or Ob/Gyn Faculty

1. External cephalic version
2. Repair of fourth degree laceration (if FM attending privileged)
3. Active maternal use of cocaine, amphetamines, heroin or methadone

4. Amniocentesis for pulmonary maturity
5. Twin gestation
6. Postpartum tubal ligation
7. Need for abdominal delivery
8. Malpresentation (breech, brow, transverse)
9. Vaginal Breech Delivery (if FM attending privileged)
10. Gestational diabetes, requiring insulin
11. Type 2 diabetes
12. Second or third trimester fetal demise
13. Preterm onset of labor (≥ 30 and < 34 wks)**
14. Preterm rupture of membranes (≥ 32 wks)**
15. Chronic Hypertension requiring intrapartum IV anti-hypertensive***
16. Pre-eclampsia with severe features by ACOG criteria***

** If not delivered and managed conservatively, consult with MFM service to see if should be admitted to MFM or FM antenatal service.

*** Inform MFM/Ob-Gyn of patient's presence on L&D

C. Level III – Formal Consultation with Ob/Gyn faculty

1. Midpelvic operative vaginal delivery
2. Third trimester bleeding from previa or abruption
3. Planned c-sections that are at high risk for hysterectomy or complex adnexal/pelvic surgery should have formal consultation prior to planned c-section with determination of the most appropriate surgical team for delivery. This would include patients with possible accreta, previa in patient with prior c/s so at risk of accreta, large fibroids in lower uterine segment, or adnexal pathology.
4. Preterm labor < 30 weeks
5. Preterm rupture of membranes < 32 weeks

B. Level IV – Transfer of primary responsibility to Ob/Gyn faculty or MFM Faculty

1. Eclampsia
2. Severe maternal morbidity as defined by ACOG

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C. Items covered by credentialing process:

1. Vaginal Breech deliveries including the second twin
2. Low and outlet vacuum deliveries
3. Low and outlet forceps deliveries
4. Repair of third or fourth degree episiotomies or lacerations
5. Postpartum tubal ligation

IX. ADMISSION GUIDELINES

The MCH service admits patients from the following clinics. Other patients may also be admitted/transferred to the MCH service on a case-by-case basis.

- UNM Family Medicine Center
- UNM Southeast Heights
- UNM Northeast Heights
- UNM Westside
- UNM 1209
- Milagro
- First Nations
- Cuba
- Dar a Luz
- First Choice –All sites except for CNM patients at Belen. We offer care at Los Lunas as do CNMs and patient should be admitted to service of prenatal care provider.
- IHS – patients that see residents and selected FM attendings by prior arrangement,

X. TEEN PATIENTS

- A. Document “teen pregnancy” on problem list.
- B. Check with school provider as there may be more information gained than just via interview, and they will have most recent lab results.
- C. If they are at a high school that has a SBHC, there may be teen specific prenatal and parenting classes available to them. Check with the school clinic. Consider a referral to New Futures local high school for pregnant and parenting teens.
- D. Should consider scheduling these patients more frequently than usually recommended. (Consider q 2 weeks initially until an adequate assessment of reliability, social situation and mental health is established.)
- E. Involvement of the father of the baby (FOB) and parents in the prenatal care is encouraged.
- F. Teens should be encouraged to plan who will help during the intrapartum course and living arrangements after delivery.
- G. Have a plan for birth control established during prenatal care with encouragement of long acting reversible contraception (IUDs and Nexplanons)
- H. Poor weight gain during pregnancy is an even stronger predictor of poor outcome in teens. Consider a nutrition consult, and offer additional follow-up on diet each visit.
- I. Studies have shown improved infant outcome with: higher self-esteem, better coping skills, more social support (especially from family and FOB), nurse case management and higher maternal education.

XI. MATERNAL AGE GREATER THAN 35 YEARS BY TIME OF DELIVERY

- A. Discuss the risk of Down Syndrome and other chromosomal abnormalities. This should be discussed with all patients regardless of maternal age (see prenatal section above).
- B. Offer genetic screening & counseling at initial visit with invasive (amniocentesis or chorionic villous sampling) or non-invasive methods (cell-free DNA or contingency screening), document patient's choice, and make a referral to Genetics if testing or more information on testing is desired.
- C. Patients may elect to have genetic counseling and a level II ultrasound without further testing, and can make that decision during their genetics appointment.
- D. Amniocentesis is optimally done at 15-16 weeks gestation. Patients who are under 13 weeks may be referred to UNM prenatal genetics for 1st tri genetics US with nuchal translucency between 11-13 weeks accompanied by first tri serum markers. Amniocentesis has approximately 1/300 to 1/500 risk for fetal loss.
- E. Chorionic Villous Sampling is available at 11-13 weeks at UNM, and may be a preferred option if patients are considering termination. The risk for fetal loss with CVS may be slightly greater than with amniocentesis.
- F. Cell-free DNA: Although expensive, direct assessment of certain fetal karyotypes (T-21, T-13, T-18, & Turner's) by maternal blood screening is available for women who are AMA or have increased risk based on serum screening or anomalies on ultrasound, and may eventually be offered to all patients. This is not recommended as an initial screen at this time to low risk women. These tests are done through UNM Prenatal Diagnostics or private perinatal practices in town, however this is anticipated to change in the near future. This testing may not be covered by insurance.

XII. VAGINAL BIRTH AFTER CESAREAN SECTION

All women who have had prior cesarean sections need to be evaluated to determine if they are candidates for VBAC (Vaginal Birth After Cesarean Section) or TOLAC (Trial of Labor after Cesarean). **Request operative note for past C-section ASAP** during prenatal care.

- A. Women who have had a single uncomplicated LTCS (low transverse cesarean section) are candidates for VBAC and may be approved without consultation after review of the surgical report.
- B. Women who have had more than one LUST C-section and no vaginal deliveries need a careful review of their past obstetrical history, future childbearing plans and patient

preferences. Women with 2 prior LUST CS and a vaginal delivery are usually good VBAC candidates. Women with two prior cesareans should either be seen or be discussed with an FM surgical OB attending (Leeman, Gopman, Yonke). Many of these women are now considered good candidates for TOLAC with an example being the woman who had her first cesarean for breech and the second was a scheduled repeat. She should have equivalent rate of success to average TOLAC candidate and only a slightly increase in rate of uterine rupture (e.g. from 1/200 to 1/100)

- C. Women who have had classical C-sections, T-shaped incisions, or significant superior extensions of LUST incisions are not VBAC candidates. Low vertical incisions must be evaluated individually.
- D. Women with unknown scar (i.e. can't obtain op report) are usually TOLAC candidates unless at high risk of having had prior vertical uterine incision (e.g. cesarean at less than 30 weeks or for transverse lie or placenta previa. Discuss by phone with Drs. Leeman, Gopman or Yonke to confirm TOLAC candidate.
- E. Discussions about the risks (including uterine rupture) and benefits of VBAC should be well documented. A patient education handout, which is also an informed consent document, should be reviewed with the patient and signed during the prenatal course. This should start early in prenatal care, even if a patient desires a repeat C-section.
- F. Induction is associated with an increased risk of uterine rupture to about 1% compared to overall baseline risk of uterine rupture with single prior LTCS cesarean and no induction of about 0.5%. It is appropriate to readdress the decision for a TOLAC when an induction becomes indicated. As long as antepartum surveillance is reassuring it may be preferable to wait until 42 weeks to initiate a post dates induction in a VBAC candidate. We **do not use misoprostol** or other prostaglandins in patients with prior cesarean section. A Foley balloon or Cook Catheter induction can be considered for cervical ripening if the cervix is dilated enough to admit the Foley balloon or Cook Catheter, otherwise low dose oxytocin is the only ripening/induction agent.
- G. VBAC labor needs careful ongoing evaluation. A fetal scalp monitor (internal fetal monitor) should be placed when membranes are ruptured if there is difficulty picking up fetal heart tones. Walking telemetry may be used when TOLAC patients are ambulating. An intrauterine pressure catheter should usually be inserted when oxytocin is being used, membranes are ruptured and a regular contraction pattern is present. Uterine rupture occurs more commonly in the setting of prolonged labor dystocia and a cesarean may be the preferred choice for some cases of protracted labor which would not necessarily require cesarean delivery in a woman without a prior cesarean.
- H. **The Family Medicine operative backup attending (Leeman/Gopman/Yonke) should be informed when any VBAC patient is admitted to labor and delivery.** If they are not on campus, the Ob/Gyn service should also be informed through the 3rd-year or 4th-year Ob/Gyn resident on the Labor and Delivery service.

- I. The cesarean backup (Leeman/Gopman/Yonke or Ob/Gyn) should be informed when any VBAC patient has arrest of labor with no cervical change for two hours or has a protracted latent or active stage of labor. A second stage lasting more than 2 hours without epidural or 3 hours with epidural is also an indication for consultation with the cesarean backup.
- J. A key to a successful VBAC evaluation process is promptly obtaining and reviewing the surgical and obstetrical records.

XIII. SCHEDULING REPEAT C-SECTIONS ON THE MCH SERVICE

The MCH operative back-up attendings and fellows should be notified of patients choosing or requiring repeat C-section at ~ 34 weeks in order to schedule the C-sections. Patients should be NPO for at least 8 hours prior to their scheduled C-section time. Please warn women that C-sections may be delayed by urgent C-sections on L&D that morning.

XIV. MALPRESENTATION & EXTERNAL CEPHALIC VERSION

1. Fetal presentation should be assessed at all prenatal visits > 34 weeks. If Leopold's do not determine presentation, a vaginal exam may be helpful to feel for sutures. If an ultrasound is not available at the clinic to determine presentation when physical exam is uncertain, the patient can be referred to the fetal testing center for an US for presentation.
2. All patients who are not cephalic at 36 weeks should be counseled and referred for external cephalic version (ECV).
3. ECV can be scheduled by contacting the MCH-OB faculty and/or fellow. ECV is usually performed at 37 weeks, but may be performed later in pregnancy with less success. All women should be advised to be NPO for 8 hours prior to their scheduled ECV in case emergent C-section is needed (risk < 1 in 200).

XV. RHO (D) IMMUNIZATION

- A. If a woman is Rho (D) positive or weakly positive, no further intervention is needed.
- B. RhoGAM is a blood product that provides passive immunity against Rho (D) and prevents development of antibodies. The IV form is more expensive and is usually reserved for very large fetal-maternal hemorrhage or idiopathic thrombocytopenic purpura.
- C. If a woman is Rho (D) negative or mosaic Rho (D), but titers reveal she is not Rho (D) isoimmunized:
 1. Note Rh status on problem list. Rh-negative women are uncommon in our population and this is a useful reminder.

2. Antibody screening is performed again at 28 weeks gestation (do screening before administering RhoGAM because RhoGAM can change screening results).
 3. If no anti-D antibody is detected, 300 micrograms of Rh immunoglobulin (RhoGAM) is given; if anti-D antibody is present, RhoGAM is not given, the antibody titers are determined, and MFM is consulted if titer is rising or >1:8.
- D. Amniocentesis - A 300 microgram dose is given following second or third trimester amniocentesis. These patients remain candidates for prophylaxis at 28 weeks gestation and postpartum.
- E. Abortion (SAB and TAB) - A 50-microgram dose is given if abortion occurs in the first trimester. A full 300-microgram dose is given to a mother who aborts after 13 weeks gestation. A full dose may be given in the first trimester if a 50-mcg dose is not available.
- F. Antepartum hemorrhage - Obtain a Kleinhauer-Betke (KB) test. The KB test is useful to determine the extent of fetomaternal hemorrhage (the extent to which fetal blood has entered the maternal circulation). The results can then be used to determine the correct dosage of RhoGAM. The KB test is performed whenever fetomaternal hemorrhage is suspected, as might be the case with abdominal trauma or abruption at delivery. 20 micrograms of Rh immunoglobulin is given to the mother per calculated cc of packed Rh(D) positive cells that leaked into the mother from the fetus, e.g. the usual dose of 300 micrograms of RhoGAM protects against 15 cc of fetal cells.
- G. Delivery - If infant is Rh(D) positive:
1. The usual dose for a normal delivery is 300 micrograms;
 2. If there is suspicion of abruption then a KB test is performed and the dose is determined.
 3. As previously explained above, the RhoGAM should be given within 72 hours of delivery.
- H. Other indications for administration include:
1. 300 micrograms with significant abdominal trauma without vaginal bleeding or with external cephalic version.
 2. 50 micrograms is also usually administered with ectopic pregnancy and usually post abortion/miscarriage.
 3. RhoGAM would also be recommended for chorionic villus sampling, fetal blood sampling, hydatidiform mole, threatened ab, and fetal death in the second or third trimester.
- I. RhoGAM does not need to be re-administered if an adequate dose has been administered within the last 21 days (unless a large fetal maternal hemorrhage is detected). Fetal cord blood can be falsely positive, so if initial screen is positive then fetal serum should be tested. It can also be falsely positive from antepartum RhoGAM administration (weakly), fetal-maternal ABO incompatibility, or if mother has a clinically significant IgG alloantibody that crosses the placenta. A woman can demonstrate a titer of ≤ 4 with passive immunization from RhoGAM or maternal fetal ABO incompatibility. RhoGAM should be given within 72 hours of delivery but can be

given up to 13 days (some feel that as late as 28 days offers some benefit). Use with caution in patients with a maternal history of hypersensitivity to globulins.

XVI. ANTEPARTUM HYPERTENSION AND PREECLAMPSIA

A. Categories

1. Chronic or antepartum hypertension – Three or more BP >140 systolic or 90 diastolic diagnosed prior to pregnancy, before 20 weeks gestation or persists greater than 12 weeks postpartum.
2. Gestational hypertension - Elevated BP diagnosed after 20 weeks without proteinuria. Includes women who have “occult” chronic hypertension, women who will develop pre-eclampsia, and women with benign transient hypertension.
3. Preeclampsia - Elevated BP with proteinuria or without proteinuria if other lab abnormalities present; see below under severe features.
4. Chronic hypertension with superimposed preeclampsia - Rise of SBP \geq 30 mm, DBP \geq 15 or development of proteinuria or symptoms/lab tests c/w preeclampsia with severe features or HELLP.
5. Eclampsia - convulsions or coma unrelated to known CNS disorder and with signs and symptoms of preeclampsia.
6. HELLP Syndrome - (better called multisystem disease) **H**emolysis, **E**levated **L**iver enzymes, **L**ow **P**latelets.
7. Postpartum HTN: a small number of women may develop preeclampsia postpartum.

B. Risks Factors for Preeclampsia

- | | |
|------------------------------------|---------------------------|
| 1. Primiparity | 7. Multifetal pregnancy |
| 2. Preeclampsia in prior pregnancy | 8. In vitro fertilization |
| 3. Family history of preeclampsia | 9. Diabetes type I or II |
| 4. >40 years old | 10. Obesity |
| 5. Chronic HTN or renal disease | 11. SLE |
| 6. History of thrombophilia | |

C. Prevention of Preeclampsia

1. Women with a history of early-onset preeclampsia < 34 weeks or preeclampsia in more than one pregnancy should be started on aspirin 81 mg in the late first trimester.
2. Calcium supplementation (1.5 to 2g/day) can be considered with women with low baseline calcium intake (< 600 mg/day). This is rare in the U.S.

D. Classifying Preeclampsia

1. Preeclampsia without severe features (formerly known as mild preeclampsia)
 - SBP \geq 140 or DBP \geq 90 after 20 weeks gestation in a woman with normal BP previously; this must be documented on two occasions at least four hours apart.
 - Proteinuria
 - > 300 mg in 24 hours or \geq 0.3 on protein/creatinine ratio.

- $\geq 1+$ on dipstick (30 mg/dL) needs evaluation if any concern about blood pressure and ≥ 2 always needs quantification with 24 hr urine or urine p/c ratio. Consider urine culture to r/o bacteriuria as a cause of proteinuria.
- Dipstick reading of 1+ only diagnostic if other quantitative methods not available.
- Edema
 - **This often may be the first sign of preeclampsia, but is not diagnostic as an isolated finding.
 - Clinically evident swelling and rapid weight gain requires close observation even when BP is normal and there is no proteinuria.

2. Severe Features (any of these criteria in a woman with preclampsia)

- SBP ≥ 160 or DPB ≥ 110
- Progressive renal insufficiency with creatinine ≥ 1.1 mg/dl or doubled from baseline assuming no other renal disease
- Cerebral or visual disturbance - H/A, blurry vision
- Impaired liver function: doubling of transaminases to twice normal levels or severe epigastric or RUQ pain unresponsive to medications or without an alternative diagnosis
- Thrombocytopenia platelets $< 100,000$
- Pulmonary edema
- Proteinuria **is not** necessary for the diagnosis of preeclampsia if there is new-onset HTN with one of the severe features listed above.

E. Laboratory Evaluation

- CBC with platelet count
- Urine for protein and specific gravity. Protein/creatinine ratio is ordered to quantitate proteinuria or a 24-hour urine total protein. Order the P/C ratio separately as STAT "protein, random urine" and STAT "creatinine, random urine" because the results return quickly. Please make sure the HUC in OB triage understands to order these separately. The "protein/creatinine ratio" order is sent out to Tricore and may take one day to return.
- Serum creatinine
- AST, ALT
- Uric acid (indicator of renal function)
- LDH (indicator of microangiopathic hemolysis)

F. Antenatal Treatment and Management of chronic hypertension

1. Antihypertensive medicines: Often women with mild hypertension may be taken off hypertension medicines and observed carefully for recurrence of hypertension in pregnancy. Medication is generally withheld in asymptomatic women unless the diastolic pressure is persistently > 100 or the systolic pressure persistently > 150 . Consult for questions regarding hypertension medicines in pregnancy. Common medications used:

- Labetalol: Starting dose: 100mg PO BID or TID (max 800 mg po tid but may consider a second medicine when reach 400 mg po tid).
- Methyldopa: Starting dose po: 250mg po BID (maximum 1000 mg po bid).
- Nifedipine XL; Starting dose 30 mg po qd (max 90 mg po qd).

** Avoid atenolol as it can decrease uterine perfusion.

** ACE inhibitors/diuretics – contraindicated.

2. Antepartum surveillance

- Serial ultrasounds q 4 weeks for fetal growth with Doppler's, beginning at 26 weeks.
- NSTs 2x/week beginning at 32-34 weeks. Timing of initiation depends on degree of hypertension. If off meds and appropriate growth, may not need biweekly testing.
- AFI 1x/week (vs. 2x/week in pre-eclampsia).
- 20% will develop superimposed preeclampsia.

3. Delivery: Induction recommended at 38-39 weeks. Timing depends on whether the patient is on medication and cervical examination, but deliver all prior to their due date.

4. Please notify MCH fellows of chronic HTN patients on medications so they can be added to the co-follow list.

G. Management of preeclampsia or gestational HTN without severe features

1. Antenatal steroids should be given if <34 weeks gestation if at high risk of delivering within 7 days.

2. If under 37 weeks, expectant management is indicated for preeclampsia without severe features. This should include: labs as noted above, NST/AFI, US for growth, serial BP's, 24-hr urine collection for protein. Patients can then be followed as outpatients unless:

- Non-compliant patient
- Diastolic >100 or systolic >150
- Abnormal LFTs or platelets
- Non-reassuring fetal testing
- Abnormal fetal growth
- Maternal symptoms

3. Antepartum surveillance should include:

- NST and AFI 2x/wk (may be once a week if gestational hypertension rather than preeclampsia)
- Twice weekly BP measurement
- At least weekly PIH labs
- Daily monitoring of maternal symptoms and fetal movement by patient
- Serial US q 3weeks with Dopplers

4. Timing of Delivery:

- Usual recommendation is delivery at 37 weeks for preeclampsia without severe features if all surveillance above is normal. New ACOG guidelines also recommend IOL for gestational HTN at 37 weeks.
- All patients with preeclampsia with severe features or preeclampsia without severe features prior to 34 weeks should be discussed with FM MCH fellowship faculty, MCH fellows or MFM.

5. Intrapartum Management:

- PreE without severe features:
 - Magnesium sulfate administered per guidelines below.
 - PIH labs checked q 24 hours if normal, more frequently if abnormal (8-12 hr)
- PreE with severe features:

- Magnesium sulfate for all women
- PIH labs q 6 hours
- Need q 2 hr magnesium checks/notes reviewing BP & meds, FHT, UOP, respiratory rate, auscultating lungs for pulmonary edema, checking DTRs & mental status.

H. Seizure prophylaxis with magnesium sulfate

1. Severe: Begin Mg SO₄. Usual dose is 4gm IV loading dose over 10 minutes followed by 2gm/hr gtt. Continue the gtt only if patellar reflex is present, respirations are >12/min and UOP >100cc q 4hr. Check serum Mag level if UOP ≤ 35 cc/hr, loss of reflexes, elevated creatinine (>0.8), decreased respiratory rate or altered mental status/excessive sleepiness. If elevated creatinine (>0.8) consider starting gtt at one gram/hour and follow magnesium levels. Magnesium gtt is continued for 24 hours postpartum.
2. Preeclampsia without severe features: Use of magnesium sulfate is controversial in this group however per 2014 ACOG task force magnesium is not routinely indicated in preeclampsia. Postpartum MgSO₄ is associated with a four-fold increase in postpartum hemorrhage. Postpartum Pitocin, in women receiving MgSO₄ is strongly recommended for at least the first 6-12 hours. Methergine is contraindicated.
3. Eclamptics should be protected from injury and loaded with MgSO₄. Avoid giving Diazepam or Phenytoin as they sedate the patient and may precipitate need for intubation and/or increase the risk of aspiration pneumonia.

Magnesium Sulfate for preeclampsia without severe features on MCH service

Women with **mild gestational hypertension** should not receive magnesium sulfate unless their blood pressure progresses to severe range (i.e. >160/110 for at least 15 minutes) or develop signs or symptoms of preeclampsia with severe features.

Women with **preeclampsia without severe features** may receive magnesium sulfate on an individual basis if they if they are having **persistent** blood pressures approaching severe range) i.e. SBP > 150 or DBP >100 or rising transaminases, rising creatinine or thrombocytopenia that do not yet meet criteria for severe. This may be a creatinine of 1.0, platelets <120 K or any elevation of transaminases above normal. *The decision to initiate magnesium in a patient with preeclampsia whose BP do not meet the criteria for severe (i.e. SBP >160 or> DBP 110 but meet the above BP criteria (persistent above SBP >150 or DBP >100 may include consideration regarding whether delivery is imminent, blood pressures are felt to have been assessed during contraction and overall clinical picture as well as provider preference. If BP are in severe range magnesium sulfate for seizure prophylaxis is mandatory .*

All women with **preeclampsia with severe features** should receive magnesium for seizure prophylaxis when in labor or having labor induction.

Antepartum/Intrapartum Treatment of Severe Blood Pressure on MCH Service

Sustained severe range BP (SBP \geq 160 or DPB \geq 110) are treated to prevent complications such as CHF, myocardial ischemia, renal injury, and stroke. The target BP is SBP 140-150 and DBP 90-100 mm Hg. Lowering the BP too much may decrease perfusion to the placenta. The MCH fellow should be notified to consult on patients with severe range blood pressures, but treatment should not be delayed waiting for the fellow to evaluate the patient. If BP is well controlled with intermittent doses of antihypertensives, the fellow does not need to be in house. The fellow should be called if multiple sequential doses of anti-hypertensives are required without good BP control.

Treatment of Severe Range BP – see MFM protocol for details

- Labetalol IV: starting at 10 mg IV and doubling dose every 10 minutes (up to a maximum of 40 mg per dose) until BP in mild range. Max of 220 mg in urgent situation.
- Hydralazine: 5mg IV followed by 5 – 10 mg doses q 20min.
- Nifedipine: 10-20 mg po q 30 minutes may be considered in a patient with no IV or difficult to obtain IV access. (Headache is common side effect)

Postpartum Care of Women with HTN Disorders on the MCH Service

- 1) ACOG recommends that women with gestational HTN or preeclampsia be monitored for at least 72 hours postpartum and again 7-10 days after delivery or earlier if symptoms.
- 2) Persistent postpartum HTN with **SBP \geq 150 or DBP \geq 100** on at least two occasions should be treated with antihypertensives (nifedipine XL 30-120 mg/day or labetalol 200-2400 mg BID-TID) with dose increased until BP are controlled. Usual starting dose is labetalol 200 mg po TID or Nifedipine XL 30 mg po QD. A lower threshold is used for treatment postpartum because we are no longer worried about perfusing the placenta. Some women require both nifedipine and labetalol to control their BP postpartum. The fellow and/or MCH consultant attending can help guide medication management.
- 3) Women should not be discharged until their BP is controlled SBP < 150 or DBP < 100.
- 4) Women who present with preeclampsia with severe features postpartum should be treated with magnesium for 24 hours from the time of diagnosis and treated with antihypertensives to control BP with goal SBP < 150 or DBP < 100.

See UNM MFM guidelines http://hsc.unm.edu/som/obgyn/fetal_protocols.shtml

AAFP ALSO chapter on Medical Complication in Pregnancy

ACOG Hypertension in Pregnancy 2013.

http://www.acog.org/Resources_And_Publications/Task_Force_and_Work_Group_Reports/Hypertension_in_Pregnancy for additional information regarding management of preeclampsia and gestational hypertension.

XVII. GESTATIONAL AND PREGESTATIONAL DIABETES MELLITUS

A. Screening

1. Initial prenatal screening

- a. All pregnant women without known pregestational diabetes should have a fasting plasma glucose, random plasma glucose, or HgBA1c at presentation for the initial screening. HbA1c is recommended when feasible.
- b. If A1c $\geq 6.5\%$, FPG $\geq 125\text{mg/dl}$ or random plasma glucose $\geq 200\text{mg/dl}$ + confirmation, diagnose with overt diabetes and treat accordingly.
- c. If fasting glucose $\geq 92\text{mg/dl}$, but $< 126\text{mg/dl}$, diagnose as GDM and treat accordingly.
- d. If fasting glucose $< 92\text{mg/dl}$, test for GDM at 24-28 weeks with a one hour 50 gm glucola.
- e. If HbA1c 5.7% - 6.4%, or initial random plasma glucose is 140-199, check fasting glucose at next visit if prior to 24 weeks and diagnose according to above criteria. If 24-28 weeks perform 2 hr 75 gm OGTT or one hour 50 gm glucola
- f. If the patient has a previous history of GDM or is otherwise "high risk" for DM, an HbA1c **and** fasting blood sugar is done at presentation.

"High risk" is:

- Habitual abortion
- History of unexplained IUFD
- History of macrosomia without GDM
- History of polyhydramnios without GDM
- History of congenital anomalies
- Glucosuria
- History of glucose intolerance
- Marked obesity
- Strong family hx of diabetes

2. All without a diagnosis of preexisting DM or GDM should have a one-hour glucola (or alternative of 75 gram fasting 2 hr GTT) at 24-28 weeks.

Option A: A 50 gm glucose load is administered to the patient and plasma glucose is measured 1 hour later. Abnormal plasma glucose ≥ 140 .

- a. If abnormal, do a 3-hour GTT.
- b. If screen is very abnormal, i.e. > 200 , check a FBS next. If FBS ≥ 92 , patient has gestational diabetes and may begin management without undergoing 100 gm glucose load.
- c. 3-hour GTT (or 2 hr GTT) is a fasting test. Plasma glucose values are measured at fasting, then hourly for 3 hours (after a 100 gm glucose load). Normal values are:
 - FBS – <95
 - 1 hour – <180
 - 2 hour – <155
 - 3 hour – <140

- d. Glucose intolerant: normal FBS, one other value abnormal.
- e. Gestational diabetes: abnormal fasting or two other values abnormal.
- f. Although a 3 hr GTT is traditional followup to an elevated one hour glucola, a two hour GTT (with 75 grams glucose) may now be done instead (see below)

Option B: 75 gram Fasting 2 hour GTT with 75 grams glucose may be substituted for one hr glucola. 2 hr GTT is fasting and diagnostic for GDM if single abnormal value:

FBS \geq 92
 one hr \geq 180
 two hr value \geq 153

B. Management of Glucose Intolerance (one abnormal value on 3 hr GTT)

1. Refer to nutritionist if available. Continue routine prenatal care and no need to check finger stick glucose. Patient should follow a diabetic diet as if they have diabetes.
2. Repeat 2 hr 75 gm GTT or 100 gm 3 hour GTT in 4 weeks but not before 24 weeks.
 - Proceed as usual if new GDM.
 - If still glucose intolerant, continue with diabetic ed/diet, no need to repeat 3 hour GTT again.
3. Use of 75 gm two hour fasting GTT will eliminate category of glucose intolerance as single value diagnoses GDM

C. Management of Diet-Controlled GDM (GDMA1)

1. Visits weekly once control achieved, then may go to q2 weeks until 30 weeks, then weekly again after 30 weeks.
2. FBS & 2-hour postprandial after each meal for self-monitoring QID. Goals are FBS <95, 2-hr pp <120. HbA1C values are unreliable in pregnancy and a low value can often give false reassurance of good glycemic control. A reliable patient's report of their sugars is a more valuable source of information.
3. Dating ultrasound if not already done.
4. Refer for diabetic teaching/diet.
5. Ultrasound at 36-38 weeks for estimated fetal weight, rule out macrosomia. If > 4000 gm or > 90 percentile for estimated gestational age consider induction at 39 weeks.
6. Twice a week NSTs starting at 40 weeks with weekly AFI if good glycemic control. If poor, treat as requiring meds (GDMA2/DM).
7. Recommend induction at 41 weeks if good dates.
8. Start insulin, Metformin, or Glyburide (if after 14 weeks) for FBS >95; 2 hour >120 in two or more values in a week. May continue additional week of dietary management if issue was noncompliance with diet.
9. Notify MCH Fellow of GDMA2 patients.

D. Oral Agents

1. Glyburide may be initiated in GDM or Type 2 DM after 14 weeks. Start At 2.5 MG BID OR 5MG Q AM depending on timing of elevated glucose. Maximum dose is 20 mg total per day. Follow similar to DM on insulin (i.e GDMA2)..

2. Metformin: Developing role in type 2 DM who conceive on metformin or need large doses of insulin or as alternative to glyburide for GDMs. Start at 500 mg po bid and increase to 1000 mg po bid or 850 mg po tid with meals Use only in consultation with FP OB fellowship faculty or fellows or MFM DM clinic. Follow similar to DM on insulin (i.e GDMA2).

E. Management of GDM Requiring Insulin (not pregestational)

1. Start insulin QID at 0.4 -0.6 units/kg/day with Lispro (30% of total) with each meal and 10% as NPH qhs for 4x/day dosing. Self-monitoring QID.
2. Visits weekly after 20 weeks.
3. Ultrasound at 29, 33, 37 weeks for estimated fetal weight (see above).
4. Twice weekly NSTs with AFI once a week starting at 32 weeks.
5. Consider induction at 39 weeks if ripe cervix. Do not allow pregnancy to continue beyond due date.
6. Consider primary C-section if estimated fetal weight > 4500 gm.
7. Remember, at higher risk to develop PIH.

F. Management of Pregestational GDM

1. Convert from oral sulfonylurea agent at time of diagnosis of pregnancy. May keep on metformin throughout pregnancy after discussion with FP-OB fellowship faculty.
2. Weekly visits after 20 weeks. Frequent visits sooner if poor control.
3. Ophthalmology referral. Obtain baseline EKG, if not done recently.
4. Renal function initially and followed if indicated. Hg A₁C initially, and follow q 4-6 weeks.
5. Level II/Genetics ultrasound 18-20 weeks at UNM Women's Ultrasound to confirm dates, rule out anomalies.
6. Ultrasound at 38 weeks for estimated fetal weight (see above).
7. Twice weekly NSTs with AFI once a week starting at 32 weeks.
8. Plan induction at 39 weeks if ripe cervix and may defer until EDC if clinically indicated such as primip with unripe cervix who is in good control without macrosomia.
9. Consider primary C-section if estimated fetal weight > 4500 gm.
10. Remember, at higher risk to develop PIH.
11. Notify fellow of all pregestational DM patients.

G. Intrapartum management of gestational diabetics on insulin or glyburide or pregestational diabetics

1. See MFM guidelines. http://hsc.unm.edu/som/obgyn/fetal_protocols.shtml
2. Key is excellent intrapartum control for at least 6 hrs prior to delivery with glucose in 60-100 range (goal 70-90). Rare to need insulin drip in gestational diabetics not on insulin, but some type 2 may need drip. Per MFM guidelines, this is usually achieved with concurrent D5 and insulin drips. Check fingerstick glucose q1-2 hrs with goal being under 100-110.

H. Postpartum Management

1. All gestational diabetic patients should have a fasting blood sugar near the time of the postpartum visit, and then annually to screen for DM. A HbA_{1c} may be used for the postpartum screen at twelve weeks

2. Pregestational diabetics normally return to their pre-pregnant insulin needs. They should be followed closely in the postpartum period to adjust their insulin as needed. We will generally decrease their insulin by 50% postpartum to avoid hypoglycemia.
3. Family planning - gestational and pregestational diabetics: All methods of birth control are appropriate for postpartum patients who do not have any other risk factors for a particular method. However, Depo Provera has been associated with weight gain, and earlier development of DM in patients with prior GDM. It is essential that patients with type 2 DM be in excellent control (HbA1c under 7.0) prior to conception to minimize the risk of congenital anomalies.

XVIII. PRETERM LABOR

A. Definitions

1. Preterm labor - prior to 37 weeks gestation, progressive cervical dilatation and effacement or cervical dilatation ≥ 3 , and uterine contractions.
2. "POOC" (premature onset of contractions) - onset of regular contractions prior to 37 weeks gestation without cervical change (over a period of observation).
3. PROM – premature rupture of membranes prior to onset of contractions, may be preterm (<37 weeks) or term (>37 weeks).
4. PPROM- preterm premature rupture of membranes (<37 weeks)

B. Risk Factors

Most significant are:

1. PRIOR DELIVERY OF A PRETERM INFANT (increased risk 3x)
2. Multiple gestation

Other risk factors include:

1. Low pre-pregnancy weight
2. Polyhydramnios
3. Antepartum hypertension, PIH
4. Cocaine or tobacco use
5. Maternal infections including UTIs, amnionitis, peritonitis, group B strep
6. Cervical incompetence or uterine anomalies
7. Abruptio placenta, placenta previa, or vaginal bleeding
8. IUGR, fetal malformations
9. Work with long periods of standing and long hours
10. Short interpregnancy interval (< 18 mo.)
11. Anemia
12. Extremes of maternal age

C. Prevention and Screening

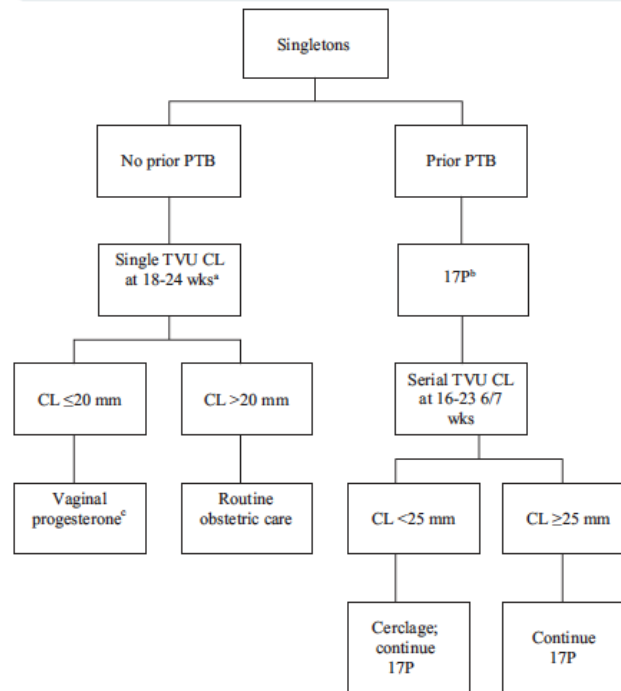
1. Patients should be screened for the above risk factors and cervical dilatation/effacement documented at the first prenatal visit. Wet preps should be done at initial pap/pelvic if vaginal discharge or symptoms of vaginitis present. Bacterial vaginosis should be treated if symptomatic.
2. All patients, regardless of risk factors, should be counseled on signs of PTL (>50% of patients who develop PTL have no risk factors).

3. Progesterone treatment has been found to reduce the risk of preterm delivery in women with a history of prior spontaneous preterm delivery (SPTD - not induced or delivered preterm for other fetal or maternal indication) and in women with no history of preterm delivery, but with a short cervix on screening US.
4. Women with a history of SPTD < 37 weeks gestation:
 - a. Offer treatment with progesterone (17-P 250 mg IM) starting as early as possible between 16-24 weeks gestation and continuing until 36 weeks. Vaginal progesterone may be used if a patient has no payer source for IM progesterone (see below for information on how to order progesterone).
 - b. Order a cervical length (CL) US measured every two weeks starting at 16 weeks until 22 weeks gestation. If the cervix is short < 25 mm, the screening interval should be weekly.
 - c. Women with a history of SPTD & a CL < 25 mm can also be offered a cerclage.
 - d. Cervical length US should not be ordered after 30 weeks gestation
 - e.
5. No history of SPTD:
 - a. Women without a history of SPTD with a singleton gestation can be screened for a short cervix with a transvaginal CL US at the 20-week anatomic US.
 - b. A CL \leq 20 mm before 24 weeks gestation is associated with increased risk of SPTD and these women should be started on progesterone.
 - c. Women on progesterone may have serial CL measurements every 2-4 weeks until 30weeks. If the cervix is \leq 20mm antenatal corticosteroids may be administered.
6. Multiple Gestation: progesterone has not been found to decrease the risk of SPTD in twins, but a CL can be ordered as part of the anatomic US.
7. Progesterone Treatment: In general IM progesterone is the preventive treatment for a prior hx of PTD and vaginal progesterone for a short cervix, however this may on occasion need to be altered due to difficulty obtaining one form of the medication
 - a. Vaginal progesterone suppositories (200 mg pv qhs) for a short cervix <20 mm can be obtained from Highland Pharmacy, 717 Encino Place NE, Albuquerque, NM 87102. (505) 243-3777 or 800-305-0405. These are not currently covered by Medicaid programs and cost ~\$30/month.
 - i. Women using vaginal suppositories often note vaginal discharge after waking up in AM and it is helpful to discuss this when prescribing.
 - b. Prometrium 200 mg capsules q HS may be inserted vaginally instead of the compounded suppositories. These may be covered by Medicaid if a patient cannot afford the suppositories.
 - c. IM progesterone injections (17 Alpha-Hydroxyprogesterone Caproate) 250mg IM weekly. Depending on insurance, is ordered through Alere Home Health (call them or complete form on website) or order directly from Makena (through referral form on their website). The Alere Home health program will administer weekly IM 17-HP injections to women at home. Makena will be mailed to clinic

and patients can come in weekly for RN visit injections. May initiate up to 26 weeks for indication of short cervix however earlier is preferred.

- d. It is important that patients continue on progesterone until 36-37 weeks as withdrawal could potentially initiate labor. Discuss this prior to initiating therapy.
8. Consult with Larry Leeman, Sarah Gopman, Nicole Yonke or MCH fellows for patients with a history of SPTD or short cervix on screening US.

FIGURE
Algorithm for use of progestogens in prevention of PTB in clinical care



^aif TVU CL screening is performed; ^b17P 250 mg intramuscularly every week from 16-20 weeks to 36 weeks; ^ceg, daily 200-mg suppository or 90-mg gel from time of diagnosis of short CL to 36 weeks. CL, cervical length; PTB, preterm birth; 17P, 17-alpha-hydroxy-progesterone caproate; TVU, transvaginal ultrasound. SMFM. Progesterone and preterm birth prevention. *Am J Obstet Gynecol* 2012.

Society for Maternal-Fetal Medicine Publications Committee waoVB. Progesterone and preterm birth prevention: translating clinical trials data into clinical practice. *American journal of obstetrics and gynecology*. May 2012;206(5):376-386.

D. Management

1. Any symptoms of PTL should be evaluated immediately with:
 - UA/UC
 - Vaginal cultures (wet prep, GBS, GC, chlamydia)
 - Sterile speculum exam for PROM (Nitrazine, ferning). Do not perform digital cervical exam unless PROM not present or delivery imminent.
 - External fetal heart rate and contraction monitoring.
 - Fetal fibronectin: If having regular contractions between 24-34 weeks obtain fetal fibronectin test prior to performing digital examination. Only valid if patient has not had digital exam, intercourse, vaginal bleeding or vaginal ultrasound for 24 hours. Only send the fetal fibronectin if will affect treatment decisions (i.e. no benefit if delivery imminent or contractions stop spontaneously with observation). Residents should discuss with an attending whether to send

fibronectin due to high expense of the test. However, it should be collected at time of initial exam and held until decision is made on whether to send it.

2. If PTL, POOC, or PROM diagnosed:

- Evaluate for estimated gestational age. If uncertain, may need to confirm dates by ultrasound or, in some cases, assess fetal lung maturity by amniocentesis before determining gestational management. Treat for GBS according to guidelines regarding “unknown GBS status”.
 - Administer corticosteroids if 34 weeks or less (see below). UNM Note MFM guidelines recommend <32 weeks with PPROM but we commonly use with 32-33 PPROM due to lack of adverse effects of single course of ANCS and possible benefit.
 - Administer antibiotics per GBS guidelines.
 - Evaluate for contraindications to tocolytics. These may include:
 - Ruptured membranes
 - Intrauterine infection
 - Severe preeclampsia
 - Abruptio
 - Fetal anomalies or demise
 - Imminent delivery (>6 cm dilatation: relative contraindication)
 - Severe IUGR
 - Maternal hemorrhage with hemodynamic instability
- If PTL or POOC, with membranes intact, without imminent delivery, therapeutic options include:
 - Bed rest
 - Hydration
 - Tocolysis
 - Terbutaline (contraindicated in cardiac disease, uncontrolled DM or uncontrolled hyperthyroidism). Dose: 0.25mg sq q 30min.
 - MgSO₄ (contraindicated in myasthenia gravis or cardiac disease). Caution in renal insufficiency. Dose is 4-6gm IV loading dose over 20min followed by 2gm/hr gtt.
 - Nifedipine **is our first choice agent on MCH** - Start with 20 mg po and may give additional 10 mg po q one hour up to total of 30 mg loading dose as long as systolic blood pressure remains above 90 and no evidence of uteroplacental insufficiency on continuous monitoring. Continue on 20 mg po q4-6 hrs until steroid complete. May continue until 36 weeks in selected patients - e.g. recurrent preterm labor after stopping nifedipine or preterm labor stopped with dilation at early gestational age.
 - Indomethacin* - 50 mg po then 25-50 mg q 6 for maximum of 48 hours. Need to confirm adequate amniotic fluid prior to use and monitor AFI after use. Use over 48 hours is associated with closure of ductus arteriosus. Only indicated if <32 weeks estimated gestational age.
**Do not use indomethacin without consultation with FP OB fellowship faculty or Ob/Gyn.*
 - Consult freely for help with tocolytic agents.
- Most patients with POOC do not need tocolysis. Women with POOC can be treated with hydration, decreased activity level and observed carefully for

cervical change. Management of POOC will be individualized based on gestational age, cervical dilatation and precipitating factors. Occasionally nifedipine may be used as an outpatient for POOC.

- Steroids IM - All patients with a high risk of preterm delivery from 24-34 weeks should receive IM steroids with either:
 - Betamethasone 12 mg, IM, two doses, 24 hours apart, or
 - Dexamethasone 6 mg, IM, four doses, 12 hours apart***Preferred is betamethasone because of recent studies showing superior effectiveness against intraventricular hemorrhage.*
- If PTL is resolved with or without tocolysis, follow-up after hospitalization may include:
 - Cervical length ultrasound or fetal fibronectin to assess likelihood of preterm delivery.
 - Frequent (weekly) cervix exams preferably by same examiner.
 - Modified bed rest, pelvic rest.
 - Patient education regarding symptoms and signs of when to come to the hospital.

XIX. PRETERM PREMATURE RUPTURE OF MEMBRANES (PPROM)

Definition: Spontaneous rupture of membranes at less than 37 weeks prior to onset of contractions.

1. < 34 weeks gestation: give antenatal corticosteroids and begin antibiotics for PPROM
 - Ampicillin 2g IV q 6 hr x and Azithromycin 500 mg IV q 24 hrs for 48 hours each followed by amox 250 mg po and erythro base 333 mg po q 8 for 5 days. See MFM protocol. If allergy, consult MCH-OB attending. Hospitalized until delivery at 34 weeks or delivery sooner if onset of labor, NRFS, chorioamnionitis, or concerning maternal status.
2. ≥ 34 weeks gestation: Induction of labor with good dates. Treat for specific infection with antibiotics that target those infections. (e.g. BV, UTI, Chlamydia)

XX. PREMATURE RUPTURE OF MEMBRANES (PROM) AT TERM

- A. Definition: Spontaneous rupture of membranes at term prior to the onset of uterine contractions.

Comments: Expectant management vs. active management (Pitocin induction) has remained controversial over several decades. **ACOG now recommends initiation of oxytocin at time of labor floor admission unless in spontaneous labor or patient declines.** Oral misoprostol may also be used, 50 mcg po q 4 hr, see MFM miso protocol.

B. Initial evaluation with term PROM

1. Sterile speculum exam:
 - Insert sterile speculum without lubricating jelly
 - Observe pooling or fluid coming from the cervical os. If none is seen, have

patient bear down or cough or lie flat for 45 minutes and repeat exam later. If pooling seen, check for meconium.

- Ferning: Collect sample of fluid from pool in posterior fornix and allow to dry for 10 minutes to observe for ferning. Be careful to avoid cervical mucus when taking sample, which can also cause ferning that appears different from amniotic fluid.
 - Check Nitrazine. Turns blue with amniotic fluid. A false positive can be caused by urine, blood, semen, BV, Trichomonas.
 - If discharge seen, also perform wet mount.
 - Visual inspection of cervix for estimate of dilatation, presentation.
 - Inspection of the vulva for herpetic lesions.
2. No digital exam unless in active labor, and minimize the number of digital exams during labor.
 3. NST to confirm fetal well-being.
 4. Leopold's and/or ultrasound to confirm vertex presentation if not obvious by cervical inspection.
 5. If equivocal exam, can check AFI.

C. Disposition

If nonreassuring fetal tracing, thick meconium, GBS positive, PIH, maternal fever and/or fetal tachycardia initiate induction immediately. Pitocin or misoprostol may be used unless contraindications to either.

D. Guidelines for expectant management

1. No digital cervical exams until active labor (regular and strong contractions).

E. May continue expectant management up to 12 hours if patient declines induction at admission. Prolonged expectant management is medically reasonable (e.g. 24 hours) but is generally neither preferred by women nor an efficient use of inpatient hospitalization and is not currently recommended by national guidelines. The occasional patient preferring expectant management until 24 hours may be discharged home to await labor or to return at a specified time point between 12 and 24 hours such as 7 am.

2. If evidence of maternal fever and/or fetal tachycardia, begin antibiotics and initiate induction.

3. GBS – treat according to GBS cx (should have been done). Do not treat if cx negative even if ruptured > 18 hours. If GBS status unknown, obtain rapid GBS if at least 37 weeks.

4. If maternal temp > 38.0C begin antibiotics for chorioamnionitis including gram-negative coverage. If history of Group B strep bacteriuria during pregnancy, history of prior infant with symptomatic GBS, or EGA <37 weeks, begin antibiotic therapy at presentation (see GBS guidelines).

XXI. LATE TERM (41 0/7 – 41 6/7 WEEKS) AND POSTTERM (>42 0/7 WEEKS) PREGNANCY

A. Beginning at 41 weeks gestation - order 2x/week NSTs with AFI and remind patient about Fetal Kick Counts (if feels like less fetal movement then count and normal is

eight kicks in two hours).

- B. Encourage induction if ripe cervix at 41 weeks. All patients reaching 41 weeks should have cervical exam as part of postdates evaluation/counseling. All patients need to be counseled about risks (long induction/ with increased “medicalization”) vs. benefits (decreased risk of IUFD) with induction at 41 weeks vs. surveillance. C-section rate is NOT increased by induction at 41 weeks compared to surveillance and may even be slightly decreased due to less cesareans for uteroplacental insufficiency/NRFHTs.
- C. Delivery by 42 weeks in almost all cases.
- D. Deliver if oligohydramnios (AFI <5.0).
- E. Encourage performing stripping of membranes at 40 weeks gestation or later. A cervical exam at this time will help with postterm planning
- F. Do not routinely deliver prior to 41 weeks (e.g. 40 2/7) and call this a postdates induction as this is not indicated. A woman with maternal age of 40 or greater may be induced at 40 weeks due to some evidence of increased risk of IUFD in this group.

XXII. LABOR INDUCTION AND AUGMENTATION: OXYTOCIN, PROSTAGLANDINS & FOLEY BALLOONS

A) Labor induction may alter the likelihood of cesarean delivery, lengthen the total time of labor and delivery admission and affect a woman’s experience of labor and childbirth. Induction before 39 weeks is associated with an increase in neonatal morbidity due to prematurity. Due to these concerns professional groups including AAFP, COG, SMFM and the March of Dimes have made national recommendations regarding labor induction.

1. Labor induction should not be initiated prior to 39 completed weeks without a medical indication. Social or elective inductions are not appropriate.
2. Labor induction should not occur without a medical indication in women between 39 0/6 and 40 6/7 weeks who have an unripe cervix (Bishop score less than eight)

Techniques of labor induction used at UNM include agents for cervical ripening (misoprostol, Foley catheter, Cook Catheter), oxytocin continuous intravenous infusion, and amniotomy. Amniotomy should rarely be the first choice except in the situation of advanced cervical dilation (4-5 cm) with cervical effacement. UNM MFM and L&D protocols have been developed for the use of misoprostol, Foley/Cook catheters and oxytocin infusion. The UNM MCH services follow these protocols. The following induction guidelines have been developed to facilitate a consistency in approach and to minimize the morbidity inherent in failed labor inductions and prolonged labors.

1. Women who are being induced and have an unripe cervix will benefit from cervical

ripening, which will shorten the total time of labor. Cervical ripeness can be defined as a Bishop score of >8, however it has been shown that dilation is the most important component in the Bishop score and use of a cervical ripening agent in all women with cervical dilation of 2 cm or less is reasonable.

2. Women with a prior cesarean who are candidates for TOLAC may have labor induced with oxytocin and Cook or Foley Catheters may be used for ripening.

Misoprostol is contraindicated in this situation

3. Consider performing a contraction stress test prior to misoprostol a woman who has IUGR, abnormal fetal Doppler measurements, or concern for fetal heart rate decelerations on baseline strip. Placement of a Foley or Cook for ripening may be an alternative to a CST. There are no hard and fast rules for who needs a CST and clinical judgment combined with consultation with FP OB fellowship or Ob/Gyn faculty may be helpful.

4. The medical (misoprostol) and mechanical (Cook or Foley catheters) may be complementary methods of cervical ripening. Clinical observation has demonstrated that the cervix that is dilated to 3-4 cm after a catheter, but still is firm with minimal effacement can be hard to induced with Pitocin. One preferred option is to start with two or three vaginal doses of 25 mcg misoprostol and then switch to a Cook or Foley catheter overnight or for 10-12 hours. When using misoprostol it is common to have a contraction pattern at 4 hours that does not permit additional miso doses. Waiting for up to two additional hours is preferable to starting oxytocin with an unripe cervix because the contractions often decrease between 4- 6 hours. Alternatively, it may become clear after 2 hours that she is in labor and does not require additional pharmacological induction. A cook catheter and misoprostol can also be used simultaneously per the MFM misoprostol protocol.

<http://hsc.unm.edu/som/obgyn/docs/protocols/38.pdf>

5. When oxytocin is started for labor induction either at the beginning of the induction or after cervical ripening, the goal is to gradually increase the oxytocin until a contraction pattern is achieved with moderately strong contractions q 2-3 minutes. The oxytocin should be increased at the indicated interval unless concerns about fetal monitoring prevent this or the desired contraction frequency has been achieved. Women with a prior cesarean will be on a “slow Pitocin” protocol. Most other women should be on the “normal Pitocin” protocol.

6. On occasion, oxytocin will need to be reduced due to tachysystole (contractions closer than q 2 minutes) or due to concerning fetal monitoring. The usual response to tachysystole when the fetus is tolerating well is a gradual decrease in the infusion rate. When there is a concerning fetal monitoring in the setting of tachysystole with oxytocin augmentation and the oxytocin has been turned off, one approach is to wait 30 minutes and then start back at half the prior infusion rate.

7. Labor induction can take a long time prior to active labor. Recent ACOG/MFM guidelines recommend reserving the diagnosis of **“failed induction” for those women who have not achieved regular (e.g., every 3 minutes) contractions and cervical change after at least 24 hours of oxytocin administration with artificial membrane rupture if feasible (after completion of cervical ripening). In the latent phase of labor (< 6 cm dilation), failed induction should not be determined** unless Oxytocin has been administered for at least 24 hour including at least 12-18 hours after membrane rupture. Implicit in these guidelines is a willingness to proceed with amniotomy and commit the induction until delivery.

8. If a woman remains under 6 cm dilation with intact membranes, an alternative in certain situations may be to stop the induction and wait a few days before trying again. This is only appropriate in non-progressive conditions with reassuring maternal and fetal status. This would not be appropriate for preeclampsia or IUGR, but may be a reasonable option in mild gestational hypertension at 37 weeks, gestational diabetes at 38-39 week, or perhaps late term at 41 1/7.
2. Labor augmentation. Oxytocin augmentation should be initiated when a patient in labor fails to progress for 2-4 hours and contractions are felt not to be adequate. If the patient is under 6 cm dilation then an alternative is to reevaluate and decide that the patient is not in active labor and to discharge her home to await spontaneous labor as long as there are no maternal or fetal concerns. Standards of active-phase progress should not be applied to women < 6 cm dilated. Oxytocin titration is similar in labor augmentation and induction and a slow oxytocin protocol is indicated in women with prior cesarean who are attempting TOLAC.
 3. Consultation of operative obstetrical backup (FP OB fellowship faculty or Ob/Gyn) for prolonged labor or failed induction. Prolonged labor induction and/or augmentation presents several potential fetal and maternal risks including development of chorioamnionitis, increased incidence of postpartum hemorrhage, uterine rupture particularly in the woman with a scarred uterus and difficult cesarean delivery after a prolonged second stage labor. The operative backup should be consulted in the following scenarios:

A) Labor induction with oxytocin has occurred for 24 hours and the patient is not in active labor. The 24 hrs. does not include any time period of cervical ripening. In this situation amniotomy will have been performed if technically feasible – e.g. not at high station and/or unengaged vertex.

B) Arrest of active labor for four hours without cervical change with adequate uterine activity or 6 hours of oxytocin with inadequate uterine activity and no cervical change.

C) Second stage labor with active pushing over four hrs. in primip with epidural or over 3 hours in any patient. A maximum of 90 minutes of laboring down is encouraged before initiating active maternal efforts when the vtx is above plus two station and a spontaneous urge to push is not present with an epidural. Patients with a prolonged second stage should have been assessed for OP position, which can benefit from manual rotation. It is helpful to establish position early in the second stage at the beginning of pushing instead of waiting until after pushing.

XXIII. EMERGENT CESAREAN DELIVERY ON THE MCH SERVICE

If emergent C-section delivery is required on the MCH service with no MCH surgical attending in house, the MCH surgical attending on call (Larry Leeman, Sarah Gopman, or Nicole Yonke) and MCH fellow on call should be notified immediately, even if the OB/Gyn team has already taken the patient to the OR. The MCH resident should help transfer the patient to the OR with the OB/Gyn team, help the Ob/Gyn team as directed, and report the history (SBAR) to the OB/Gyn team.

XXIV. SEXUALLY TRANSMITTED INFECTION (STI) IN PREGNANCY

A. General

1. All prenatal patients are screened for STD's at the first prenatal visit (Chlamydia, GC, RPR, HBsAg, HIV).
2. Any patient at high risk for STD's (illicit drug use, prior STD during pregnancy, multiple sex partners, HIV-infected partner) should be re-screened in the third trimester. Consider re-screening in the third trimester in all teen patients (especially for chlamydia).
3. Any patient with no prenatal care presenting in labor should be screened if possible at delivery.
4. Any patient who delivers a stillborn infant should be (re) tested for syphilis.
5. **Treat partners!**
6. A test for hepatitis C antibodies (anti-HCV) should be performed at the first prenatal visit for pregnant women at high risk for exposure. Women at high risk include those with a history of injection-drug use, repeated exposure to blood products, prior blood transfusion, organ transplants or incarceration. If Hepatitis C positive, obtain Liver Function tests and quantitative PCR (viral loads).

B. Chlamydia Cervicitis

1. Recommended:
Azithromycin 1 gm po x 1*
2. Retest the patient four weeks after completion of therapy to test for re-infection, as azithromycin is effective for treatment. Treat partner and discuss HIV and other STD testing. Testing for chlamydia and GC should be repeated in the third trimester, and other STD retesting (RPR, HIV, HBsAg) considered at that time.

C. Gonorrhea

1. Recommended:
Cefixime 400 mg PO x one.
OR
Ceftriaxone 125mg IM X one
2. Pregnant women should not be treated with quinolones or tetracyclines.
3. All cases of GC must also include treatment for chlamydia, which accompanies 30-50% of cases.
4. Treat partner and discuss HIV and other STD testing.
5. Testing for chlamydia and GC should be repeated in the third trimester, and other STD retesting (RPR, HIV, hepatitis) considered at that time.

D. Vaginal Trichomoniasis

1. Recommended: Metronidazole 2 gm po x one is the only proven treatment. Older data in animals showed possible teratogenicity of metronidazole, but this has not been born out with recent studies, or with reported birth defects registries. However, some still defer treatment to the second and third trimester if asymptomatic because of these concerns.
2. The treatment of Trichomoniasis is controversial as there is one study indicating increased risk of PTD with treatment. Treatment may be deferred until 34 weeks if

- asymptomatic per patient choice after counseling
3. Treat partner and discuss HIV and other STD testing.
 4. Consider re-screening for STD's third trimester.

E. Vaginal Candidiasis

1. Miconazole or clotrimazole one application vaginally QHS x seven days.
2. It is not necessary to treat asymptomatic infections or partner.

F. Bacterial Vaginosis

1. Recommended: Metronidazole 250 mg. po tid x 7 days.**
Alternative: Clindamycin 300 mg po bid x 7 days.
***Doses are lower during pregnancy for a theoretical advantage of less exposure to the fetus. Efficacy for vaginal metronidazole has not been established. Vaginal clindamycin is not recommended because of two studies showing an increase in preterm deliveries in women treated this way.*
2. Only women who are at high risk of preterm labor (previous preterm delivery, current pre-term labor, multiple gestation) should be screened for BV, since studies have shown that treating BV lowers the risk of PTL only in women at high risk for preterm labor. High-risk women should have follow-up testing. All low risk patients should only be tested for BV if they have symptoms (i.e. discharge with an odor).
3. Diagnosis should be made on the basis of three out of the four criteria: vaginal discharge or odor, vaginal fluid pH>4.5, amino odor with KOH, and presence of clue cells on wet prep.
4. Treatment of sexual partners is not indicated.

G. Syphilis

1. Treatment of syphilis in pregnancy is complicated and consultation is encouraged.
2. Recommended treatment is same as for non-pregnant women.
 - Early syphilis: Penicillin G Benzathine 2.4 million units IM times one.
 - Late syphilis: Penicillin G Benzathine 2.4 million units IM weekly x three weeks.
Do lumbar puncture if concerned about possibility of neurosyphilis, which requires 10 to 14 days of IV therapy.
3. No need to re-treat in future pregnancies unless clinical or serologic evidence of reinfection.
4. Partner must be seen, examined and treated for appropriate stage of disease if indicated. Discuss HIV testing and other STD testing.

H. Genital herpes

1. Acyclovir is now felt to be safe in pregnancy, since current findings do not indicate a risk for birth defects. Therefore, the first clinical episode of genital herpes may be treated with oral acyclovir (400 mg po TID x 7-10 days). In the presence of life-threatening maternal HSV infection, IV acyclovir is indicated. Routine administration of acyclovir prophylaxis to **all** pregnant women who have a history of genital herpes is not recommended, however this is recommended for women with frequent recurrences at dose of 400 mg po tid initiated at 34-36 weeks. Any women with >one recurrence in a year is a reasonable candidate for prophylaxis in pregnancy as there is no evidence of any harm.

2. Patients should be inspected for lesions in labor, and considered for abdominal delivery if present.

I. HIV

Pregnant women with HIV infection should be considered for treatment based on the same parameters as non-pregnant infected patients. Many anti-retroviral regimens are used in pregnancy and can lower HIV viral load and transmission risk to the baby. These patients should be seen by an infectious disease consultant throughout pregnancy.

XXV. GROUP B STREP INFECTION IN PREGNANCY

In November 2010 the CDC released new guidelines for the prevention of neonatal Group B streptococcal disease. The CDC has recommended a universal screening approach for all prenatal patients.

The complete guidelines are available on the CDC web site at

<http://www.cdc.gov/groupbstrep/guidelines/guidelines.html>

Here is a summary and specific recommendations:

- A. Vaginal and rectal GBS screening cultures should be done on all prenatal women at 35-37 wks gestation (even if planned C-section since SROM or labor may start before planned CS). **Cultures done at >35 weeks are good until delivery, while cultures done < 35 weeks are only reliable for about 5 weeks.** Re-screen women at 35-37 weeks if culture was done earlier in pregnancy and was negative. Women who screened positive earlier in pregnancy with a threatened PTL episode should be treated as positive when true labor begins.

NOTE: Screening is not necessary if a patient already had GBS bacteriuria during current pregnancy or a previous infant with invasive GBS disease. These women should be treated as positive.

1. Swab the vaginal introitus, followed by the rectum (**inserting the swab through the anal sphincter**) and place in transport medium (same as we use for throat cultures). Use one swab for both areas unless there is concern about HPV or herpes transmission.
2. Results should be available in 48 hrs.
3. ****Treat GBS positive urine as you would a UTI.** (See UTI in pregnancy for recommended antibiotics.)
4. Rapid GBS: If presents in labor or for induction at ≥ 37 weeks without a GBS result, perform a rapid GBS test (royal blue writing on package), which will be back within 2 hours. Start IV antibiotics while awaiting rapid GBS if delivery within next 4-6 hours is anticipated and may then stop if GBS negative.
5. **A rapid GBS CANNOT be used for women < 37 weeks.** All these women should be treated for GBS and a regular GBS culture should be obtained.

- B. Intrapartum prophylaxis indicated if:

1. Previous infant with invasive GBS.
2. GBS bacteriuria during current pregnancy.
3. Positive GBS screening during current pregnancy (unless a planned C-section in

the absence of labor or SR0M).

4. Unknown GBS status (culture not done, incomplete, results unknown) and any of the following:
 - delivery at <37 weeks
 - SR0M \geq 18 hrs
 - intrapartum temp \geq 100.0^F (Note: in this case, patient needs antibiotics for presumed chorioamnionitis that includes GBS coverage.)

We now perform rapid GBS if unknown at \geq 37 weeks so this situation should be uncommon

5. If negative rapid GBS, still need to treat if ROM \geq 18 hours, so start treatment at 14 hours unless delivery is imminent
- C. Intrapartum prophylaxis *not* indicated if:
1. Previous pregnancy with a positive GBS screening culture (unless a culture was also positive during current pregnancy).
 2. Planned C-section with no labor and no SR0M.
 3. Negative routine vaginal and rectal GBS screening late in current pregnancy, regardless of ROM >18 hours. Women with only a rapid GBS that is negative do need antibiotic prophylaxis if ROM>18 hours
- D. Recommended regimens for intrapartum antimicrobial prophylaxis:
1. Penicillin G, 5 million units IV initial dose, then 2.5 million units IV q 4 hours until delivery unless pen-allergic. Preferred choice if available.
 2. *Alternative:* Ampicillin 2 grams IV initial dose, then 1 gram IV q4 hrs until delivery unless pen-allergic.
- E. If pen-allergic:
- Determine if history of mild allergy (rash), or high risk of anaphylaxis (h/o hives, wheezing, anaphylaxis, angioedema).
1. If pen allergic and pt not at high risk anaphylaxis:
 - Cefazolin 2 grams IV initial dose, then 1 gram IV q 8 hrs until delivery
 2. If pen allergic and high-risk anaphylaxis , ask lab to check sensitivities when you collect the culture. Tricor has a distinct order for PCN allergic.
 3. a) GBS susceptible to Clinda and Erythro:
 - Clindamycin 900mg IV q 8 hrs until delivery
 - b) GBS resistant to clinda or erythro (>20%) or resistance unknown: Vanco 1 gram IV q 12 until delivery
- Ideally, note sensitivities and recommended antibiotic plan on the problem list before the patient presents in labor.
- F. Threatened preterm delivery:
- Onset of labor <37 weeks and imminent preterm delivery:
1. If no GBS culture - Obtain and initiate penicillin immediately pending results.
 2. If positive GBS culture - Initiate penicillin when appears to be in labor .
 3. If negative GBS culture - No GBS prophylaxis.

XXVI. UTI IN PREGNANCY

A. Scope of problem

1. 4-10% of pregnant females have asymptomatic bacteriuria (bacteria in urine without pus or symptoms). Of these, 25-30% will develop a UTI. Some will then go on to develop pyelonephritis, which is associated with PTL, low birth weight, maternal sepsis and ARDS.
2. Therefore, we should look for and treat bacteriuria, UTI and pyelo aggressively during pregnancy.

B. Etiology

90% caused by coliform bacteria: E.coli, Klebsiella, Proteus, Enterobacter. Other pathogens are staphylococcus and Group B streptococcus.

C. Diagnosis

1. UTI and pyelo

- Cardinal symptoms - urgency, suprapubic pain, sense of incomplete emptying, hematuria.
- These, plus back pain, fever, systemic signs = pyelo.
- Must rule out vaginal etiologies of symptoms.
- Urinalysis and culture
 - Culture microorganism counts as low as 10^2 - 10^3 especially for single colony, gram (-) organism may be significant and should be treated especially if patient is symptomatic.
 - Decrease false positives by getting clean catch specimens and treating only pure colonies.
 - Avoid catheterization to insure clean catch since this can introduce infection, unless unable to obtain acceptable uncontaminated CCUA on multiple attempts.

2. Asymptomatic Bacteriuria

All prenatal patients should have a urine culture in the first trimester (or at presentation) to look for asymptomatic bacteriuria.

D. Treatment

1. UTI and asymptomatic bacteriuria:

- See table for recommendations.
- Follow-up on all infections with urine culture about two weeks after initial presentation.
- Evaluate for preterm labor and teach about symptoms.
- Do screening urine cultures q month once cleared.
- If patient has two culture positive infections then she should be started on prophylaxis for the remainder of pregnancy. (See dosage in pyelonephritis section.)

*Group B Strep bacteriuria should be treated as below with same antibiotic choices as other UTI's and labeled on the Problem List as "GBS pos urine – tx'd, needs intrapartum antibiotics" - as the vaginal colonization is considered to be higher in these patients.

2. Pyelo

- Hospitalize unless mild symptoms, adequate po intake and prior to 20 weeks

EGA.

- IV antibiotics until afebrile 24 to 48 hours, then oral to complete two-week course. Repeat urine culture after treatment.
- Recommend starting with ceftriaxone one-gram IV q 24 hours. If the patient appears more acutely ill, it may be wise to treat with ampicillin and gentamicin from the outset (antibiotics can be narrowed to monotherapy when culture and sensitivity results are available). Despite concerns about gentamicin, it has proven to be very effective and the dangers of progressive pyelonephritis frequently outweigh the risks.
- May initially give intravenous fluid relatively high rate (e.g. 200 cc /hr for one liter) or bolus if dehydrated but it is important to avoid fluid overload to prevent ARDS/pulmonary edema which occurs in pregnancy in setting of pyelonephritis.
- After urine culture is clear, place on suppressive therapy for duration of pregnancy. One study shows use of suppressive therapy decreased the recurrence of pyelo to 0% from 18% without.
- Suppressive tx: Nitrofurantoin 100 mg po QHS or Keflex 250 mg po QHS.
- If no response to IV therapy within 48-72 hours, rule out other etiologies: renal stones, abscess, etc.
- Remember - pain of pyelo can mask PTL!
- Follow patient closely with urine cultures monthly, and frequent cervical exams.
- Consider urologic work-up after delivery.

UTI AND ASYMPTOMATIC BACTERIURIA ORAL THERAPEUTICS

<u>DRUG</u>	<u>DOSE</u>	<u>COMMENTS</u>
Cephalexin (Keflex)	500 mg po QID x 7 days	
Amoxicillin/Clavulanic Acid (augmentin)	250 mg/125/mg po tid x 3 days	More GI side effects.
Nitrofurantoin	100 mg po QID x 7 days	FIRST LINE FOR UTI/cystitis. Risk of hemolytic anemia with G6PD deficiency when used in third trimester. Do not use for upper tract disease.
Trimethoprim-Sulfamethoxazole	Not recommended, except in second trimester if allergic and/or resistant to other organisms.	Not recommended. (Trimethoprim may interfere with folate metabolism = congenital defects in the first trimester. Sulfa competes with liver binding sites for bilirubin = hyperbilirubinemia in the third trimester. Also associated with hemolytic anemia in G6PD deficiency.)
Amoxicillin	Not recommended	Not recommended because of high incidence of resistance.

XXVII. ABNORMAL PAP SMEAR IN PREGNANCY

Patients with an abnormal pap smear in pregnancy should be followed according to the

“abnormal pap smear follow-up” guidelines for non-pregnant patients. Briefly, patients with ASCUS/HR HPV may have colposcopy during pregnancy or follow-up may be deferred until postpartum if they are due within 6 months. Women with LGSIL should be managed based on their age group: e.g. repeat pap if age 21-24 and offered colpo in pregnancy if >24. While colpo in pregnancy is recommended for LGSIL if over age 24 it is also acceptable to defer until postpartum based on patient and provider preference. Patients with ASC-H, HGSIL or higher should be referred for colposcopy with UNM FM colposcopist skilled in colposcopy of pregnant women (Leeman, Gopman, Yonke or other attendings). Colposcopy during pregnancy differs from colposcopy at other times due to the changes in the anatomy and vasculature of the gravid cervix and desire to avoid biopsy during pregnancy. It can be technically difficult because of the increased mucous and folds of the gravid cervix. Postpartum colposcopy can be done at 10 to 12 weeks after delivery.

XXVIII. INTRAUTERINE GROWTH RESTRICTION (IUGR) (fetus EFW is <10%)

A. Diagnosis of IUGR

1. Refer for ultrasound if fundal height >2 cm different than EGA from 20-36 weeks.
2. If it is difficult to determine fundal height due to obesity or fibroids, order one growth US at 32-34 weeks
3. Women at high risk for IUGR due to history of IUGR in previous pregnancy order growth US q 4 weeks starting at 26 weeks.
4. Review EGA based on all ultrasounds and LMP and recalculate EDD if indicated.
5. Determine ultrasound estimated fetal weight percentile.
6. Review ratios of fetal measurements on all ultrasounds.
7. Review interval growth between ultrasounds.
8. Consult with Larry Leeman, Sarah Gopman, Nicole Yonke or MFM if diagnosis unclear.

B. Pregnancy is High Risk for:

1. Fetal Demise
2. Fetal Distress in Labor
3. Neonatal Complications
4. Highest risk is EFW < 3%.

C. Management of IUGR

1. Questionable or borderline IUGR: May initiate bi-weekly modified biophysical profiles (i.e. NST and AFI) and q 3-week ultrasounds for interval growth to determine if IUGR is present and/or for surveillance until diagnosis is made. Umbilical artery Dopplers can be useful in determining if labor induction is needed and differentiating the constitutionally small fetus from the truly growth restricted fetus with uteroplacental insufficiency.
2. Symmetrical IUGR (normal HC/AC ratio): Institute bi-weekly modified biophysical profiles (or BPP) and q 3-4 week ultrasounds. Order TORCH titers, anti-phospholipid antibodies, and lupus anticoagulant. ORDER GENETICS ULTRASOUND and perinatologist consult to determine if amniocentesis and chromosomal studies are indicated.

3. Asymmetrical IUGR (HC/AC ratio >95%): Institute bi-weekly modified biophysical profile (or BPP) and q 3-week ultrasounds. Consult regarding timing of delivery (i.e. induction or amniocentesis). Umbilical artery Dopplers should be done weekly or every other week depending on clinical situation.
4. Timing of Delivery: Delivery is usually indicated between 37 to 38 weeks to prevent stillbirths. Timing will depend on severity of IUGR, interval growth, Dopplers, AFI, and fetal surveillance results. Consult with Larry Leeman, Sarah Gopman, Nicole Yonke or MFM regarding timing of delivery.

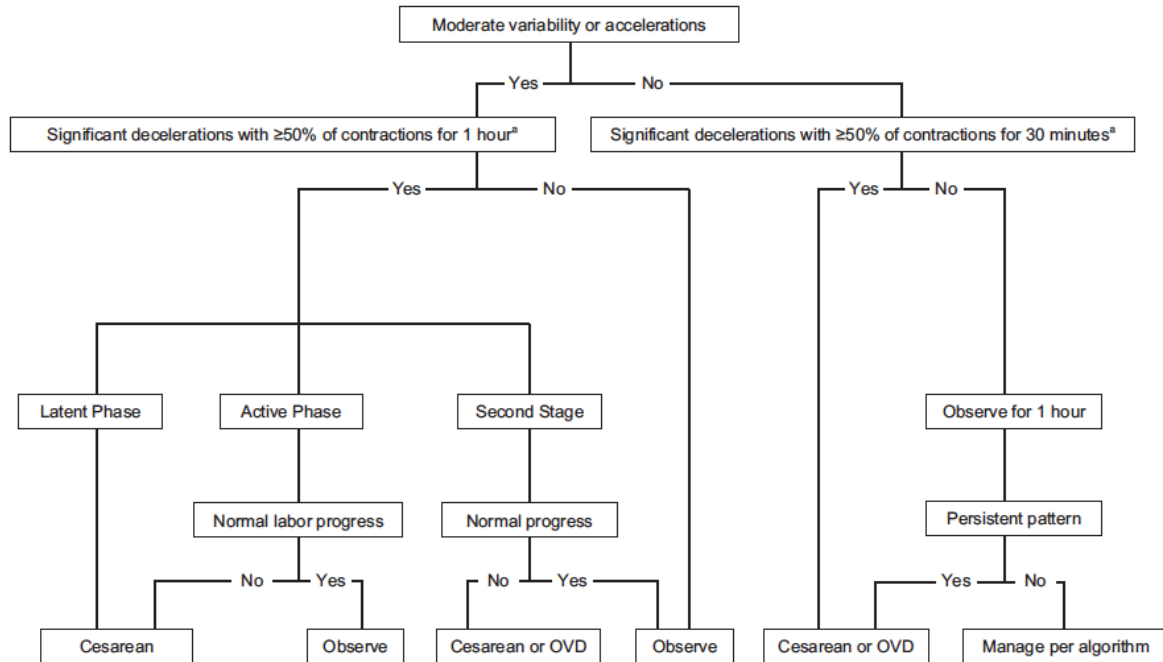
XXIX. INTRAPARTUM FETAL MONITORING AT UNM HOSPITAL FOR FM PATIENTS

- A. The fetal heart rate and pattern need to be monitored in all patients in labor. The monitoring may be by continuous monitoring or periodic monitoring at specific intervals or a combination of each. Randomized controlled studies have not shown any benefit of continuous monitoring as compared to periodic monitoring in preventing neonatal complications (e.g. fetal death, neurologic impairment) in low-risk or high-risk births. Despite these studies it is still the national standard to use continuous monitoring in *high-risk* births. Most FM births are low risk in nature, however women with pre-eclampsia, IUGR, diabetes, chronic hypertension, Pitocin augmentation, and other higher risk pregnancies require continuous monitoring.
- B. Periodic auscultation with fetoscope is a skill that requires training and experience to correctly detect the heart rate and presence of variability and decelerations in the fetal heart rate. Nurses without this training may utilize the fetal heart monitor for intermittent auscultation to record the heart rate at the appropriate intervals. If there is concern that the fetal heart rate has abnormalities in variability or significant decelerations then continuous monitoring is indicated.
- C. Protocol for Intermittent Fetal Heart Rate Monitoring
 1. All women in labor should initially have a twenty-minute period of continuous monitoring of heart rate and uterine activity. If fetal heart rate and variability are normal and periodic changes are absent then intermittent monitoring and ambulation are encouraged in the low-risk laboring woman.
 2. In the first stage of labor, a 5 minute tracing should be made every 30 minutes and in the second stage every 15 minutes. The five-minute tracing should include a contraction and a one-minute post-contraction period. If the second stage lasts for greater than 30 minutes then continuous monitoring should be initiated.
 3. Uterine activity does not have to be electronically recorded if there are no decelerations and the labor is progressing well.
 4. Continuous monitoring should be used in the high-risk patient or in the presence of abnormal fetal heart patterns during intermittent monitoring.
 5. As long as monitoring of the fetal heart rate occurs frequently enough with external monitoring to meet the standards for intermittent monitoring, then internal fetal heart monitors should not be placed solely to pick up the fetal heart more frequently in the absence of concerns regarding variability or period changes.
 6. Any abnormalities detected on fetal heart monitoring should be recorded on the labor progress note and promptly reported to the attending physician.

D. Interpretation of Category II fetal heart rate tracings

The presence of moderate variability is important to assess when interpreting fetal heart rate tracings. The absence of moderate variability is concerning for the development of fetal acidemia. The following algorithm can be helpful in the interpretation of Category II fetal heart rate tracings.

FIGURE 1
Algorithm for management of category II fetal heart rate tracings



OVD, operative vaginal delivery.

^aThat have not resolved with appropriate conservative corrective measures, which may include supplemental oxygen, maternal position changes, intravenous fluid administration, correction of hypotension, reduction or discontinuation of uterine stimulation, administration of uterine relaxant, amnioinfusion, and/or changes in second stage breathing and pushing techniques.

Clark. Category II FHRT. *Am J Obstet Gynecol* 2013.

TABLE
Management of category II fetal heart rate patterns: clarifications for use in algorithm

- Variability refers to predominant baseline FHR pattern (marked, moderate, minimal, absent) during a 30-minute evaluation period, as defined by NICHD.
- Marked variability is considered same as moderate variability for purposes of this algorithm.
- Significant decelerations are defined as any of the following:
 - Variable decelerations lasting longer than 60 seconds and reaching a nadir more than 60 bpm below baseline.
 - Variable decelerations lasting longer than 60 seconds and reaching a nadir less than 60 bpm regardless of the baseline.
 - Any late decelerations of any depth.
 - Any prolonged deceleration, as defined by the NICHD. Due to the broad heterogeneity inherent in this definition, identification of a prolonged deceleration should prompt discontinuation of the algorithm until the deceleration is resolved.
- Application of algorithm may be initially delayed for up to 30 minutes while attempts are made to alleviate category II pattern with conservative therapeutic interventions (eg, correction of hypotension, position change, amnioinfusion, tocolysis, reduction or discontinuation of oxytocin).
- Once a category II FHR pattern is identified, FHR is evaluated and algorithm applied every 30 minutes.
- Any significant change in FHR parameters should result in reapplication of algorithm.
- For category II FHR patterns in which algorithm suggests delivery is indicated, such delivery should ideally be initiated within 30 minutes of decision for cesarean.
- If at any time tracing reverts to category I status, or deteriorates for even a short time to category III status, the algorithm no longer applies. However, algorithm should be reinstated if category I pattern again reverts to category II.
- In fetus with extreme prematurity, neither significance of certain FHR patterns of concern in more mature fetus (eg, minimal variability) or ability of such fetuses to tolerate intrapartum events leading to certain types of category II patterns are well defined. This algorithm is not intended as guide to management of fetus with extreme prematurity.
- Algorithm may be overridden at any time if, after evaluation of patient, physician believes it is in best interest of the fetus to intervene sooner.

FHR, fetal heart rate; NICHD, Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Clark. Category II FHRT. *Am J Obstet Gynecol* 2013.

XXX. CORD ARTERIAL BLOOD GASES

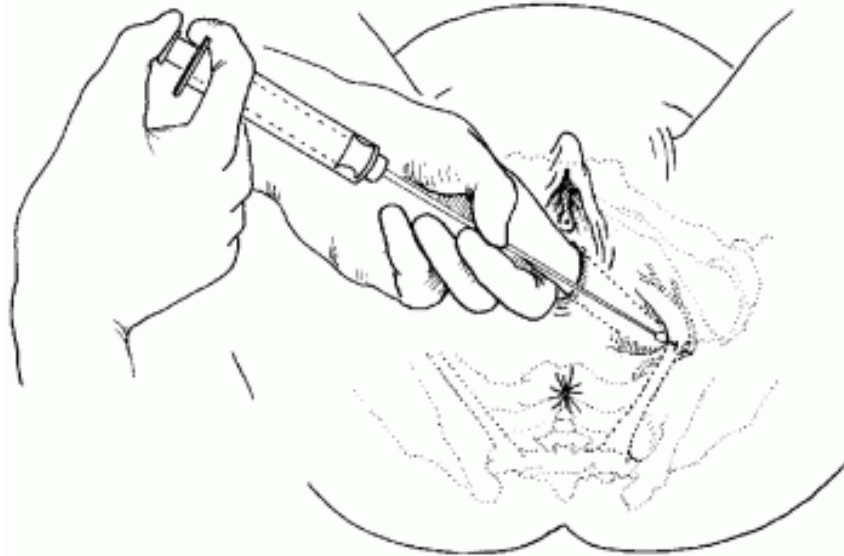
- A. Cord blood gases do not affect clinical decision-making, however they are of benefit for demonstrating whether intrapartum acidosis/asphyxia plays a role in the baby's persistent low Apgar scores. Parents having a baby with a significant neonatal problem with the possibility for future sequelae are often interested in knowing what caused the problem. The presumption is often made both by families and in medical-legal settings that intrapartum care could prevent many problems. However, problems that are not the result of intrapartum asphyxia are likely not preventable.
- B. To obtain blood gases:
 - 1. Double clamp the umbilical cord in all deliveries. Usually the infant will be vigorous and the loop of cord not sent for analysis.
 - 2. If a problem develops or persists at the time of the five-minute Apgar, then obtain an arterial blood gas specimen from the umbilical artery.
 - 3. The specimen is relatively stable at room temperature for 30-60 minutes, therefore transport in ice is not required if analysis will occur within 30 minutes as should be possible in most cases.
 - 4. If no neonatal problem is noted by five minutes then there is no need for a cord blood gas specimen (except perhaps in the case of prematurity) and the cord and placenta may be treated in usual fashion.
- C. This protocol is not mandatory and may be altered by physicians who choose not to routinely double clamp the cord. The obstetrics delivery kit has an extra clamp available for double clamping.

XXXI. OB ANALGESIA

- A. Adequate labor support and preparation for childbirth are essential for helping with labor pain. Non-pharmacologic methods of dealing with pain in labor are numerous and are usually taught in childbirth classes, during prenatal care or by our labor nurses. These issues should be discussed with patients throughout prenatal care and a plan for labor support documented. Patient preference for natural childbirth, parenteral narcotics or epidural analgesia should ideally be discussed first during their prenatal visits. All women need to know that the option of labor pain analgesics and/or non-pharmacologic methods exist. ACOG states that maternal request for pain relief during labor should be honored so long as there are no medical contraindications. Doulas offer excellent labor support, with numerous studies demonstrating decreased need for cesarean delivery and other obstetrical interventions as well as improved maternal satisfaction.
- B. Pharmacologic analgesia at UNM includes:
 - 1. Vistraril, morphine sulfate(10-15 mg IM) in latent labor
 - 2. IV fentanyl can be given in 50-100 mcg IV boluses q 30-60min. up to 150mcg/hr. Reversed by Narcan.
 - 3. Epidural analgesia
 - 4. Intrathecal analgesia

5. Local Injection Techniques:

- Pudendal Block: Useful for alleviating pain arising from vaginal and perineal distension during the second stage of labor.
- Usually 10cc of 1% lidocaine injected bilaterally (after aspiration to prevent injection into vasculature), slightly posterior to the ischial spines, using a transvaginal approach.



Vaginal Approach to Pudendal Block (from WHO manual):

- Use the left index finger to palpate the woman's left ischial spine through the vaginal wall. Use the right hand to advance the needle guide ("trumpet") towards the left spine, keeping the left fingertip at the end of the needle guide. Place the needle guide just below the tip of the ischial spine.
- Remember to keep the fingertip near the end of the needle guide. Do not place the fingertip beyond the end of the needle guide as needle-stick injury can easily occur.
- Advance a 15 cm, 22-gauge needle with attached syringe through the guide.
- Penetrate the vaginal mucosa until the needle pierces the sacrospinous ligament.
- Note: Aspirate (pull back on the plunger) to be sure that no vessel has been penetrated. If blood is returned in the syringe with aspiration, remove the needle. Re-check the position carefully and try again. Never inject if blood is aspirated. The woman can suffer convulsions and death if IV injection of lignocaine occurs.
- Inject 5 mL of 1% Lidocaine solution. Can buffer with sodium bicarb 10:1. Remember that the total dose should not exceed 3mg/kg (i.e.: 21cc [of 1%lido10mg/ml] in a 70kg person).
- Withdraw the needle into the guide and reposition the guide to just above the ischial spine.
- Penetrate the vaginal mucosa and aspirate again to be sure that no vessel has been

penetrated.

- Inject another 5 mL of 1% Lidocaine solution.
- Repeat the procedure on the other side, using the right index finger to palpate the woman's right ischial spine. Use the left hand to advance the needle and needle guide and inject the lignocaine solution.
- If an episiotomy is to be performed, infiltrate the episiotomy site in the usual manner at this time.
- At the conclusion of the set of injections, wait 2 minutes and then pinch the area with forceps. **If the woman can feel the pinch**, wait 2 more minutes and then retest.

XXXII. POSTPARTUM (BILATERAL) TUBAL LIGATIONS (PPTL) FOR FM PATIENTS

A. Prenatal Care

1. Discuss all alternatives to tubal ligation including the use of the IUD.
2. Have tubal consent papers signed as soon as possible after 24 weeks and at least 30-days prior delivery date (no later than 28-32 weeks). Sign even if covered by private insurance. Explain that signing consent does not mean BTL will be performed, but gives option of BTL if desired.
3. Make three copies of tubal consents: a copy for clinic chart, a copy for patient to carry, and a copy to go to T&T along with the prenatal records or to be scanned into Powerchart if UNM clinic.
4. Women with morbid obesity are usually not good candidates for postpartum BTL and should be counseled on Essure or other LARC methods. The federal consent form can be signed in prenatal care, but the patient should be aware that the surgeon may decide to not perform a BTL postpartum based on the patient's exam at that time.
5. Women with a history of umbilical hernia repair with mesh are not candidates for immediate postpartum BTL.

B. When patient admitted in labor

1. Confirm that the patient still desires postpartum tubal ligation and has not developed any medical problems that will delay this (e.g. endometritis or severe preeclampsia).
2. Locate copy of tubal ligation federal consent paper and place on the chart.
3. Page MCH fellow on call or Larry Leeman, Sarah Gopman, or Nicole Yonke, between 0700 and 2200, to determine availability for a postpartum tubal. Almost all FM PPTLs are done by FP OB surgical faculty, but may need to be covered by OB service at times.
4. Write patient info on BTL white board in L&D boardroom. This will make OB team, anesthesiologist, and charge RN aware of BTL.

C. After delivery

1. If an epidural is in place the patient may consider doing PPBTL 2-4 hours after delivery and staying on L&D until surgery.

2. The patient should be NPO after midnight with an IVF started when NPO.
3. Postpartum Hct ordered.
4. If Ob/Gyn resident to do the tubal with Ob/Gyn attending, then let the OB residents know about the procedure and when it will be done by Ob/Gyn service so they can pre-op patient.
5. If Larry, Sarah, or Nicole will do tubal with OB resident, then let OB resident know this and they will write pre-op note and sign consent. Larry, Sarah or Nicole should be paged to leave voice mail between 0700 and 2200.
6. If Larry or Sarah will do tubal with FM fellow/resident then the FM resident/fellow is responsible for writing pre-op note, having consent signed and being available for the tubal at 0800 in morning. If the consent is done by the FM resident then the FM OB attending will review with patient prior to go to operating room.
7. Pre-op evaluation includes knowledge of the delivery, medical problems, surgical history, BMI, history of ectopic pregnancy or PID, medicines and drug allergies.

D. After tubal ligation

1. Write brief operative note in chart, complete pathology slip, dictate operative note and write post-op orders.
2. The patient may be discharged home as soon as 4 hours post-op if they are doing well and infant is at least 24 hours old. If discharged to home on the day of tubal ligation, then an FM resident needs to see the patient prior to discharge. Patients should be discharged with a prescription for oxycodone.

XXXIII. IMMEDIATE POSTPARTUM LONG-ACTING REVERSIBLE CONTRACEPTIVES (LARCS)

- A. Women with Medicaid or without insurance coverage are eligible for immediate postpartum IUDs and Nexplanons. Women should be counseled regarding this option during prenatal care and sign a consent at that time. This may be a good option for a woman interested in an IUD or Nexplanon, but who may not return for a postpartum visit.
- B. Women in active labor should not be consented for an immediate IUD unless they previously decided in their prenatal care to have an immediate postpartum IUD inserted.
- C. Women with private insurance are not eligible at this time for immediate postpartum LARC placement and will need to have this done at the postpartum visit.
- D. All women admitted to the MCH service should be counseled on contraceptive options prior to discharge. Ideally this counseling should occur in prenatal care with a plan prior to delivery.

XXXIV. MANAGEMENT OF DEPRESSION IN PREGNANCY AND POSTPARTUM

A. Depression in Pregnancy

1. More common than in nonpregnant women.
2. Somatic symptoms of pregnancy interfere with diagnosis.
3. Edinburgh postnatal depression scale may be used in pregnancy as well as a screening tool and doesn't include somatic symptoms (see below).
4. SSRI are drugs of choice.
5. Paxil may cause cardiac defects and should be avoided in first trimester. Other

- SSRI may also cause a small increase in absolute risk of cardiac defects.
6. Risk of persistent pulmonary hypertension of newborn with use of SSRI after 20 weeks, although uncommon (<1%), but can be life threatening.
 7. Neonatal syndromes of withdrawal or serotonin toxicity may occur in short term.
 - NICU admit for jitteriness, respiratory difficulties
 8. Fluoxetine(Prozac most studied in pregnancy and sertraline(Zoloft) next. Consider changing to Zoloft at 36 weeks as may have lower incidence and length of serotonin syndrome and Zoloft is SSRI of choice for breastfeeding.
 9. Counseling regarding first trimester and later pregnancy risks (vs. benefits) must be well documented in chart at initiation of an SSRI during pregnancy, when decision is made to continue in a newly diagnosed pregnancy, and/or with continued use beyond 20 weeks gestational age.

B. Postpartum Depression

1. Incidence
 - Baby blues = 26-85%
 - Postpartum depression = about 20%
 - = 30% if hx of non-puerperal depression
 - = 50% if hx of previous postpartum depression
 - Postpartum psychosis = 0.2%
2. Timing

Symptoms worse at 4-6 weeks for depression and psychosis (blues usually ending by then).
3. Family Effects

Children and partners significantly affected. Women get worse without treatment.
4. Detection challenges

Depression overlaps with normal postpartum sx's, extreme social pressure to be a happy mom, hard to admit problem; providers want to reassure and bolster mom's confidence.
5. Screening
 - Helps detect considerably more disease.
 - Edinburgh Postnatal Depression Scale is common tool (tends to focus on anhedonia and anxiety symptoms and doesn't capture psychomotor retardation). Scoring: 10 questions, 0-3 pts ea., total score of >12 = sensitivity 80%.
6. Treatment
 - Mild-moderate = counseling, social support as beneficial as antidepressant.
 - Severe = antidepressant with or without counseling and social support.
 - Emergency psychiatric referral for psychosis.
7. Preferred drugs
 - Zoloft preferred for breastfeeding women.
 - May consider weaning or switching to shorter acting SSRI in late 3rd trimester based on severity of depression syndrome and prior history. Conversely some women with hx of pp depression should be considered for starting SSRI immediately after birth.
 - TCA's also effective but not as well tolerated.

C. Edinburgh Postnatal Depression Scale**

Validated for use by pregnant women and new mothers.

“As you have recently had a baby, we would like to know how you are feeling. Please check the box next to the answer which comes closest to how you have felt *IN THE PAST 7 DAYS*, not just how you feel today.”

1. I have been able to laugh and see the funny side of things
 - as much as I always could.
 - not quite so much now.
 - definitely not so much now.
 - not at all.

2. I have looked forward with enjoyment to things
 - as much as I ever did.
 - Rather less than I used to.
 - definitely less than I used to.a
 - hardly at all.

3. *I have blamed myself unnecessarily when things went wrong.
 - Yes, most of the time.
 - Yes, some of the time.
 - Not very often.
 - No, never.

4. I have been anxious or worried for no good reason.
 - No, not at all.
 - Hardly ever.
 - Yes, sometimes.
 - Yes, very often.

5. *I have felt scared or panicky for no very good reason.
 - Yes, quite a lot.
 - Yes, sometimes.
 - No, not much.
 - No, not at all.

6. *Things have been getting on top of me.
 - Yes, most of the time I haven't been coping as well.
 - Yes, sometimes I haven't been coping as well as usual.
 - No, most of the time I have coped quite well.
 - No, I have been coping as well as ever.

7. *I have been so unhappy that I have had difficulty sleeping.
 - Yes, most of the time.
 - Yes, sometimes.
 - Not very often.
 - No, not at all.

8. *I have felt sad or miserable.
 - Yes, most of the time.
 - Yes, quite often.
 - No, not very often.
 - No, not at all.

9. *I have been so unhappy that I have been crying.
 - Yes, most of the time.
 - Yes, quite often.
 - Only occasionally.
 - No, never.

10. *The thought of harming myself has occurred to me.
 - Yes, quite often.
 - Sometimes.
 - Hardly ever.
 - Never.

Scoring the Edinburgh Postnatal Depression Scale:

- Responses are scored 0, 1, 2 and 3 according to increased severity of symptoms (for example, in question 1, “As much as I always could” is scored as 0; “Not at all” is scored as 3).
- *Questions marked with an asterisk are reverse-scored (for example, in question 3, “Yes, most of the time” is scored as 3; “No, never” is scored as 0).
- The total score is calculated by adding together scores for each of the ten questions (see the New Mother Questionnaire Scoring Sheet).
- A score of 12 or higher indicates possible depression.

**Source: J. L. Cox, J.M. Holden, R. Sagovsky, EPDS, British Journal of Psychiatry, June 1987

XXXV. HYPERBILIRUBINEMIA IN THE TERM INFANT

- A. This guideline refers to infants ≥ 37 weeks gestation.

- B. Goal of treatment is to prevent central nervous system toxicity. There is no magic number that is “safe” or “toxic.”

- C. Risk factors
 1. Maternal
 - Rh
 - ABO incompatibility
 - Breast-feeding
 - Ethnicity - Asian, Native American
 - Diabetes
 2. Neonatal

- Prematurity
- Macrosomia
- Trauma - hematomas, bruising
- Genetics - sibling with hyperbilirubinemia
- Excessive wt loss & infrequent feedings
- Infections -TORCH
- Drugs

D. Evaluation

1. History

- Prenatal care/labs
- Family history/ethnicity
- Delivery
- Feeding/vomiting
- Stools

2. Physical exam (note that exam is of limited reliability which is why we routinely do transcutaneous bilirubin in NBN)

<u>Icteric</u>	<u>Bilirubin</u>
- Face	5mg
- Upper chest	10mg
- Abdomen	12 mg
- Palms/soles	15 mg

3. Red flags

- Jaundice in the first 24 hours
- Direct bili above 2 mg/dl
- Rise of total bili greater than 0.2mg/dl per hr
- Jaundice after two weeks in term infant
- Coombs positive

4. Evaluation: Use age specific nomogram to evaluate risk.

E. Treatment

1. Phototherapy

- Use AAP nomogram that is age specific and has differing cutoffs based on gestational age and risk factors.
- Decline 1-2 mg/dl in 4-6 hrs
- Contraindication: Conjugated hyperbilirubinemia-Bronze baby
- Cautions
 - Burns, retinal damage, temperature regulation
 - Dehydration, rash, tanning
 - Separation of infant & parents
- **Stop** - <13 mg/dl, or drop of 5 mg/dl
- Rebound? – Rare problem if not hemolytic etiology with usual rebound not more than 1 or 2 mg/dL. No need to hold a baby from discharge after phototherapy stopped to re-check a bilirubin.

2. Exchange transfusion

- Hemolytic disease, severe anemia
- Rise of >1mg/dl per hour in 6 hours

XXXVI. NEWBORN MANAGEMENT OF INFANTS BORN TO MOTHERS WHO ARE GBS (+) OR GBS UNKNOWN

- A. **For ≥ 37 weeks asymptomatic infants born to GBS+ mothers** who received optimal intrapartum antibiotics (i.e. received antibiotics >4 hrs prior to delivery using penicillin, ampicillin or cefazolin):
1. If the baby does not show any signs of sepsis, observation may occur at home after 24 hours if other discharge criteria have been met, access to medical care is readily available, and a person who is able to comply fully with instructions for home observation will be present.
 2. If any of these conditions is not met, the infant should be observed in the hospital for at least 48 hours and until discharge criteria are achieved.
 3. Establish that the mother understands the risk of infection to her infant and her ability to make appropriate arrangements for follow-up care, including transportation to follow-up care during regular working hours for outpatient medical facilities.
 4. Any mother considered for discharge before 48 hours must leave with a specific follow-up appointment arranged by the discharge provider to have the infant seen within 24-48 hours from time of discharge and have adequate family support (at minimum access to a telephone and transportation for emergencies).
 5. Care for asymptomatic infants <37 weeks born to GBS+ mothers who received optimal intrapartum antibiotics will be individualized based on clinical factors including whether the preterm delivery occurred spontaneously or was induced for maternal indications.
- B. **For asymptomatic infants ≥ 37 weeks gestation born after rupture of membranes of ≥ 18 hours born to incompletely treated GBS+ mothers** (i.e. received antibiotics <4 hrs. prior to delivery or use of antibiotic other than penicillin, ampicillin or cefazolin). *This category also includes infants <37 weeks born to mothers with negative rapid GBS as this test is not appropriate in patients at <37 weeks gestational age; instead they should receive intrapartum antibiotic prophylaxis if they do not have a negative GBS culture within five weeks.*
1. Observe infant carefully for signs and symptoms of sepsis or pneumonia. This is particularly important in the first 6 hours of life during the transition period.
 2. Anticipate a minimum 48 hours hospital stay.
 3. Perform a limited work-up with CBC and blood culture on arrival at NBN or ICN-3. If the infant appears ill, obtain a CBC and blood culture immediately and consider starting antibiotics before arranging transfer to the NICU.
 4. Start antibiotics if WBC < 5.0 or I/T ratio ≥ 0.2 .
 5. If the infant does not demonstrate symptoms of pneumonia or sepsis, observe for 48 hours. Start antibiotics if the infant has a change in clinical course or blood cultures become positive.

6. If at any time after the transition period the infant becomes symptomatic, obtain CBC and evaluate blood culture results and initiate antibiotics.

C. For asymptomatic infants \geq 37 weeks gestation without ROM of >18 hours born to incompletely treated GBS+ mothers (i.e. received antibiotics <4 hrs. prior to delivery or use of antibiotic other than penicillin, ampicillin or cefazolin):

1. Observe infant carefully for signs and symptoms of sepsis or pneumonia. This is particularly important in the first 6 hours of life during the transition period.
2. A CBC and blood culture is no longer recommended in this group.
3. Anticipate a minimum 48 hours hospital stay.
4. If the infant does not demonstrate symptoms of pneumonia or sepsis, observe for 48 hours. Start antibiotics if the infant has a change in clinical course or blood cultures become positive.
5. If at any time after the transition period the infant becomes symptomatic, obtain CBC and blood culture results and initiate antibiotics if clinically indicated.

D. For asymptomatic infants born to mothers with an unknown routine or rapid GBS culture status who did not receive intrapartum antibiotic. Determine if the mother had risk factors (see criteria below). Note: The OB provider must document in the OB chart the presence or absences of GBS risk factors.

Risk factors:

- gestational age < 37 weeks
- ROM > 18 hours
- maternal fever in labor
- maternal urine culture positive for GBS during current pregnancy
- history of prior infant with GBS disease

1. If there are no risk factors, the infant is ≥ 37 weeks gestation, and the mother received prenatal care, the infant may be discharged at 24 hrs with a follow-up appointment scheduled by the discharging provider within 24-48 hrs. Signs and symptoms of sepsis must be explained to the parents and the parents must be instructed where to bring the baby if any signs or symptoms develop.
2. If the mother with GBS unknown has risk factors, the infant will be observed for 48 hours and a limited work-up performed with CBC and blood cultures upon NBN or ICN-3 admission and consideration of ordering a CBC. No early discharge.

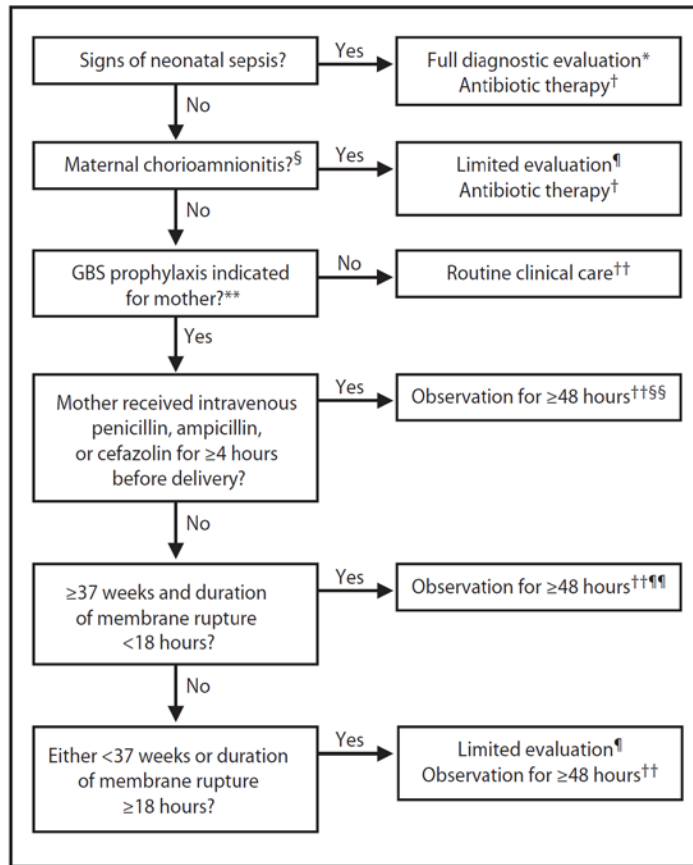
➤ **Nursing considerations** for all infants born to mothers who are GBS positive or GBS unknown with risk factors

- During the 48-hour observation period the nurse should do vital signs every 4 hours and the house officers should be notified if signs and symptoms of sepsis are present.

➤ **Other considerations**

- Mothers undergoing elective cesarean section (with intact membranes and mother did not begin labor) do not need prophylaxis regardless of their culture status.
- GBS bacteruria should be treated when diagnosed and the mother should also receive antibiotic prophylaxis in labor.

FIGURE 9. Algorithm for secondary prevention of early-onset group B streptococcal (GBS) disease among newborns



* Full diagnostic evaluation includes a blood culture, a complete blood count (CBC) including white blood cell differential and platelet counts, chest radiograph (if respiratory abnormalities are present), and lumbar puncture (if patient is stable enough to tolerate procedure and sepsis is suspected).

† Antibiotic therapy should be directed toward the most common causes of neonatal sepsis, including intravenous ampicillin for GBS and coverage for other organisms (including *Escherichia coli* and other gram-negative pathogens) and should take into account local antibiotic resistance patterns.

§ Consultation with obstetric providers is important to determine the level of clinical suspicion for chorioamnionitis. Chorioamnionitis is diagnosed clinically and some of the signs are nonspecific.

¶ Limited evaluation includes blood culture (at birth) and CBC with differential and platelets (at birth and/or at 6–12 hours of life). ** See table 3 for indications for intrapartum GBS prophylaxis.

†† If signs of sepsis develop, a full diagnostic evaluation should be conducted and antibiotic therapy initiated.

§§ If ≥37 weeks' gestation, observation may occur at home after 24 hours if other discharge criteria have been met, access to medical care is readily available, and a person who is able to comply fully with instructions for home observation will be present. If any of these conditions is not met, the infant should be observed in the hospital for at least 48 hours and until discharge criteria are achieved.

¶¶ Some experts recommend a CBC with differential

XXXVII. EVALUATION OF THE HEALTHY APPEARING TERM/NEAR TERM INFANT BORN TO A MOTHER WITH A FEVER IN LABOR

1) MATERNAL TEMP $\geq 38.4^{\circ}\text{C}$:

- CBC/Diff and Blood Culture.
- Treat infant with antibiotics regardless of GBS status or intrapartum antibiotic. Neonatal team to write antibiotics when they come to delivery if between 1600 and 0730.
- Infant brought to Newborn Nursery within 45 minutes for blood draw and initiate antibiotics.

2) MATERNAL TEMP 38.0° TO 38.3°C TIMES TWO (INCLUDES WITHIN 2 HRS POSTPARTUM)

- a) If any of the following: FHR >160 for 20 minutes or longer, ROM >24 hrs, < 37 weeks
- CBC/Diff and Blood Culture.
 - Treat infant with antibiotics regardless of GBS status or intrapartum antibiotic.
 - Infant brought to Newborn Nursery within 45 minutes for blood draw and initiate antibiotics.
- b) If none of the above factors
- CBC/Diff and Blood Culture.
 - Treat with antibiotics if Immature/Total (I/T) ratio on the CBC is ≥ 0.2 or total WBC count is <5.0.
 - Arrive at NBN within 2 hours of birth for blood draw.

Ampicillin 50 mg/kg/dose q 12 hours. NOTE THE DOSE IS UNDER REVIEW AT TIME OF 2014 MCH GUIDELINE REVISION AND MAY BE CHANGED TO 50MG/KG/DOSE Q 8 HRS OR 100 MG/KG/DOSE Q 12 HOURS

Gentamicin 4 mg/kg/dose q 24 hours for term infants, < 38 weeks dose q 36 hours.

XXXVIII. POST-PARTUM THROMBOPROPHYLAXIS AFTER CESAREAN

- A. Introduction: Pregnancy is a hypercoagulable state with a 4-5x increase in DVTs in pregnancy. When one adds additional risks for deep venous thrombosis such as surgery, infection, immobilization this risk can increase dramatically. Although it appears that 2/3 of DVT occur antepartum (with 50% being silent), pulmonary embolism more commonly (up to 60%) occurs postpartum. This VTE risk is up to 20

fold higher after a C-section. In fact 75% of maternal deaths from a postpartum VTE are associated with a C-section.

B. Risk Assessment for Embolism in Patients with C-section:

All patients undergoing a C-section delivery should be assessed for risk level as noted below.

1. Low Risk:

- C-section for uncomplicated pregnancy
- no other risk factors

Management:

All patients to have SCDs placed prior to procedure and ideally in pre-operative area, confirmed during time out process and will remain in place until patient is fully ambulatory.

2. Moderate Risk: C-section delivery and one of the following risks

- Age >35
- Obesity (BMI >30 but less than 40)
- Parity >3
- Extensive, marked varicose veins
- Current infection
- Pre-eclampsia
- Immobility for >4 days prior to surgery
- Major current illness (CHTN, Cardiac disease, lupus)
- smoking
- C-section in active labor

Management :

- All patients to have SCDs placed prior to procedure and ideally in pre-operative area, confirmed during time out process and will remain in place until patient is fully ambulatory.
- Consider LMWH if two of the risk factors are present

3. High Risk:

- Presence of more than two risk factors from moderate risk group
- C-hyst or peripartum hysterectomy
- Previous DVT or known thrombophilia.
- Morbidly obese at BMI >40

Management:

- All patients to have SCDs placed prior to procedure and ideally in pre-operative area, confirmed during time out process and will remain in place until patient is fully ambulatory.

- Receive LMWH starting 12 hours post-op after clinical evaluation to verify patient stable without bleeding concerns that would contraindicate the use of LMWH. This would continue until discharge

Special Patient Populations - there may be patients who have been seen antenatally who have a h/o DVT/PE or a known thrombophilia. These patients will have a post-partum plan delineated in the chart, which may include longer periods of anti-coagulation (i.e. 6 weeks - 6 months). Women with a recent DVT/PE will require therapeutic rather than prophylactic doses of LMWH as may women with recurrent VTE or Antiphospholipid Syndrome and are not covered by this guideline

C. Anticoagulation Thromboprophylaxis

1. LMWH – Should be started 12 hours post operatively after clinical evaluation to verify no post-operative issues that would contraindicate its use.

Low-Molecular-Weight Heparin	Body Weight			Very High Risk
	<50 kg	50–90 kg	>90 kg	
Enoxaparin	20 mg daily	40 mg daily	40 mg every 12 hr	0.5–1.0 mg/kg every 12 hr
Dalteparin	2500 U daily	5000 U daily	5000 U every 12 hr	50–100 U/kg every 12 hr
Tinzaparin	3500 U daily	4500 U daily	4500 U every 12 hr	4500 U every 12 hr

* Data are from Bates et al.²⁹ and the Royal College of Obstetricians and Gynaecologists.³⁰

2. Duration is unclear –
 - at least through the hospitalization
 - If significant risk factors will continue well into the postpartum recovery consider continuing for up to 6 weeks postpartum.

D. Postpartum Contraception

1. Any form of combination hormonal contraception is contraindicated prior to 21 days postpartum regardless of delivery mode.
2. Patients with uncomplicated vaginal delivery without other risk factors and not breast feeding could be initiated at 21+ days and at 28+ days if breastfeeding
3. Low risk patients having uncomplicated C-section as classified above may initiate combination contraception between 28-42 days depending on provider and patient assessment and preference balancing risk of DVT versus undesired pregnancy
4. Patients that were classified as moderate or high risk by above classifications should not initiate combined hormonal contraception prior to 42 days as the risk of DVT typically outweighs the benefits. However since ovulation can on occasion occur during this timeframe, a non-estrogen containing bridging contraceptive method should be recommended.
5. Long acting reversible contraception (Paragard and Mirena IUDs or Implanon insert) are excellent postpartum choices due to their high degree of effectiveness

independent of patient compliance. These methods do not contain estrogen and are excellent choice for women at higher risk for VTE.

6. Patients with a history of DVT/PE or known thrombophilia should usually not receive combination hormonal contraception

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XXXIX. BUPRENORPHINE INPATIENT INDUCTION FOR OPIATE ADDICTION IN PREGNANCY

Overview

Opioid use in pregnancy is associated with increased risk of preterm delivery, intrauterine growth restriction, neonatal abstinence syndrome, and sudden infant death syndrome. Pregnant women with opioid addiction are at increased risk for delayed prenatal care and many fail to disclose their addiction history. Treatment with prescribed long-acting opioid medication-assisted treatment improves pregnancy outcomes for opioid dependent women and their children by improving prenatal care, reducing illicit drug use and drug-related behaviors and decreasing the risk of in utero withdrawal for the fetus. While methadone therapy has a long history of safety and efficacy during pregnancy and remains the "gold standard" for opioid addicted pregnant women, current data on buprenorphine (subutex) in pregnancy have shown it to be both safe and effective with a lower incidence and milder neonatal abstinence syndrome. As buprenorphine is a relatively new medication, data regarding the long-term effects on children exposed to buprenorphine in utero is not available. An alternative to methadone is especially important in areas of the country such as rural New Mexico where access to methadone is extremely limited. Many women who are addicted to prescription opioids or already using buprenorphine are not willing to initiate methadone treatment during pregnancy.

The following guidelines have been developed to help initiate buprenorphine treatment in pregnant women with opioid addiction who are not currently being maintained with methadone. Women who are pregnant and already on methadone should be maintained on methadone throughout pregnancy due to the complexity and lack of research on safety with regards to transfer from methadone to buprenorphine in pregnancy.

Initial evaluation for buprenorphine initiation during pregnancy

This may occur during Milagro Prenatal clinic, with the Milagro Nurse Case manager, at UNM's Alcohol and Substance Abuse Program, or in UNM Obstetrical triage. The

evaluation should be done by a physician or nurse familiar with the risks and benefits of methadone and buprenorphine replacement therapy during pregnancy.

1. Contraindications to initiation of buprenorphine in pregnancy

- Has primary addiction to substance other than opioids. In particular, benzodiazepine use is contraindicated for women on buprenorphine. Women with polysubstance abuse may be initiated on buprenorphine if physician believes that the other substance abuse (e.g. alcohol, cocaine, methamphetamine) is a secondary addiction problem and that the patient has a good likelihood of abstinence from other substances once on opioid replacement therapy. This is often a subjective decision, which can be based on initial interview, past history and substance abuse review and conversations with substance abuse counselor if already engaged
- Inability or unwillingness to be seen for prenatal care and buprenorphine assessment every 1-4 weeks at the UNM Milagro clinic.
- Chronic active hepatitis with laboratory evidence of significant liver damage (i.e. transaminases > 3 times upper limit of normal)
- Preference for methadone treatment after counseling and review of UNM buprenorphine consent

2. Obstetrical assessment:

- Obtain prenatal labs with the addition of liver function tests, rapid urine drug screen (UDATR in triage or quick tox in clinic), and hepatitis C antibody. Perform NST \geq 24 weeks.
- Should have initial dating ultrasound and an ultrasound for anatomic survey if under 28 weeks. If over 28 weeks an ultrasound for fetal growth to rule out IUGR should be done at admission if not done within the last 3 weeks.
- Counseled regarding buprenorphine and consent signed. Evaluate for any contraindications to initiation of buprenorphine. Must agree to outpatient substance abuse counseling and case management through Milagro/Focus. On MCH service this needs to involve one of FM MCH faculty or fellows that are buprenorphine trained.
- If less than 22 weeks ega then may potentially have outpatient induction through Milagro Prenatal clinic. Contact Milagro OB nurse case manager to arrange outpatient prenatal intake and visit if patient is not being admitted for buprenorphine induction. If being admitted then Milagro Nurse Case Manager 505-264-8062 should be contacted to determine if intake may be done during inpatient admission and to facilitate ASAP intake for behavioral health coverage and follow-up.
- All women at >22 weeks gestational age will be admitted to UNM Women's Special Care unit for buprenorphine induction
- Financial Coverage for Buprenorphine- UNM Care and all the Medicaid Centennials will cover buprenorphine without a prior authorization. Some private insurances may require PA and this should be initiated at time of admission.
- Women without Medicaid should be warned that buprenorphine will cost ~ \$1 per mg/day out of pocket and should be advised to apply for Medicaid at WIC after discharge.

Buprenorphine Induction -inpatient

- a) Opiate withdrawal usually begins within 12 -18 hours after the last use of heroin or short acting opiates

- b) Admission to Women Special care should optimally be timed to be at 8-10 hours after the last use of a short acting opiate
- c) A COWS score assessment of withdrawal should be done at admission and at least every 2-4 hours after this until buprenorphine is initiated. Once any withdrawal is noted the COWS score should be done at least every q 2 hours prior to the initial dose of buprenorphine and one hour after each buprenorphine (subutex) dose in the first 24 hours.
- d) Women with a COWS score of >10 should receive an initial dose of buprenorphine (subutex) of 4 mg SL. If she does not have a worsening of symptoms over the next 60 minutes she should then receive an additional dose of 4 mg SL. Two hours after that she should receive an additional 4 mg SL so that she has received 12 mg in the first three hours from the time of initiation of buprenorphine unit. If the opiate addiction is not to heroin and there are not signs of withdrawal after the initial 8 mg then the additional 4 mg may be deferred
- e) Patient who are greater than 12 hours from their last use of a short acting opiate, without recent history of long acting opiate use, and scoring at least 6 on the COWS score may be given a 2 mg test dose on the recommendation of FP MCH fellowship faculty and if symptoms do not worsen over the next 60 minutes then she should then receive an additional dose of 4 mg SL. Two hours after that she should receive an additional 4 mg SL so that she has received 10 mg in the first three hours from the time of initiation of buprenorphine unit. If the opiate addiction is not to heroin and there are not signs of withdrawal after the initial 6 mg then the additional 4 mg may be deferred
- f) The patient should have a COWS score done every 4 hours during the first 24 hours of admission if she is having any signs or symptoms of withdrawal. An additional 4 mg may be given in the first 24 hours for a COWS score of >6 for a total of 14-16 mg in the first 24 hours. Any additional dosing should be discussed with the FP MCH fellowship faculty
- g) Day 2 of buprenorphine dosing. Most patient will have received 12-16 mg in the first 24 hours and they should then receive a single dose equivalent to the total initial 24-hour dosing for day #2. This dose should be given at 8 am when that is at least 8 hours since the last dose of buprenorphine, otherwise it should be given at 8 pm
- h) Maternal and fetal monitoring: Vitals done at least q four hours while awake and prior to and 30-60 minutes after each buprenorphine dose; NST on admission if over 24 weeks then BID. If develops moderate withdrawal with a COWS of >20 during buprenorphine initiation process then perform an NST at that time. If NRFS the patient should have continuous monitoring on L&D during the induction.
- i) Resident and attending documentation: Patient to be seen and counseled by FP MCH fellow or faculty or fellow with buprenorphine certification at admission. Please inform the MCH fellow or FP OB backup faculty on call prior to starting induction with buprenorphine. Resident progress notes at least q 12hours during first 24 hours of induction. Patient should usually be seen 1 hr after first dose and then 2hr later with 3rd dose and if additional doses are given due to continued withdrawal symptoms.
- j) Readiness for discharge: Patient may be discharged home when they have minimal or no signs or symptoms of withdrawal in the 12-24 hour after their last buprenorphine dose, have prenatal and buprenorphine f/u scheduled within 7 days and we have assurance of ability to have prescription filled to last until time of that appointment.

Buprenorphine Induction -outpatient

- a) Women with addiction to heroin or short acting opiates may have outpatient induction during at the Milagro Family Medicine Clinic on Tuesday mornings
- b) They should have a pre-induction intake with Milagro Nurse Case Manager, Milagro Faculty, or a Family Medicine Maternal and Child Health Fellow.
- c) The pre-induction intake includes assessment of candidacy for outpatient buprenorphine, obtaining urine UDM, signing the MCH buprenorphine consent and confirmation that <22 weeks EGA. Need to assure 3rd party coverage of buprenorphine or enroll in Medicaid prior to coming for outpatient induction
- d) Opiate withdrawal usually begins within 12 -18 hours after the last use of heroin or short acting opiates
- e) The patient should have a Milagro Clinic morning visit at 8 am which should be timed to be about 10-12 hours after the last use of a short acting opiate
- f) A COWS score assessment of withdrawal should be done at presentation for the outpatient visit and at least hour after this until buprenorphine is initiated and 30-45 minutes after each buprenorphine (subutex) dose
- g) Women with a COWS score of >10 should receive an initial dose of buprenorphine (subtext) of 4 mg SL. If she does not have a worsening of symptoms over the next 30-60 minutes she should then receive an additional dose of 4 mg SL. If she is addicted to heroin then two hours after that she should receive an additional 4 mg SL so that she has received 12 mg in the first three hours from the time of initiation of buprenorphine unit. If the opiate addiction is not to heroin and there are not signs of withdrawal after the initial 8 mg then the additional 4 mg may be deferred
- h) Patient who are greater than 12 hours from their last use of a short acting opiate, without recent history of long acting opiate use, and scoring at least 6 on the COWS score may be given a 2 mg test dose and if symptoms do not worsen over the next 60 minutes then she should then receive an additional dose of 4 mg SL. If she is addicted to heroin then two hours after the second dose that she should receive an additional 4 mg SL so that she has received 10 mg in the first three hours from the time of initiation of buprenorphine unit. If the opiate addiction is not to heroin and there are not sings of withdrawal after the initial 6 mg then the additional 4 mg may be deferred
- i) Most patients will have received 8-12 mg on day one, If they receive less than 12 mg in clinic they may be given instructions to take another 4 mg SL at home if needed
- j) Day 2 of buprenorphine dosing. The patient will receive a 7 day prescription based on the their first day dose and be seen the next day in Milagro clinic
- k) Maternal monitoring: Vitals done prior to and 30-60 minutes after each buprenorphine dose
- l) All patients having outpatient induction need to be scheduled for substance abuse counseling via outpatient Milagro counselor, ASAP, or community based substance abuse counseling

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XL. NEONATAL ABSTINENCE SYNDROME METHADONE WITHDRAWAL PROTOCOL

Step 1: 0.7 mgs/Kg/24 hrs. divided by into six doses (q 4 hrs) is starting dose

Step 2: Decrease dose by half, which is 50% of starting dose, EVERY 4 hours.

Step 3: Same dose which is 50% of starting dose EVERY 6 hours.

Step 4: Same dose which is 50% of starting dose EVERY 8 hours.

Step 5: Same dose which is 50% of starting dose EVERY 12 hours.

Step 6: Decrease dose by half, which is 25% of starting dose EVERY 12 hours.

Step 7: Same dose which is 25% of starting dose q 24 hours

Use with NURSES' expertise when decreasing doses. Decrease doses based on daily assessment of needs. Each baby is different and will score individually.

If scores are ≥ 8 three consecutive times or if the mean score of three consecutive scores is ≥ 8 or if the scores are ≥ 12 two consecutive times, then continuing present dose and interval may be necessary. Observe for 48 hours after last dose. If infant has gained weight rapidly, it may be necessary to adjust dose by using current weight as the basis for calculating the current dose while maintaining the current interval.

Contains alcohol (8%) in oral form.

Any infant with severe NAS needing greater than 0.7 mg/kg/24 hour should be evaluated for transfer to ICN-3 for closer monitoring

XLI. SHORT ACTING MORPHINE FOR NEONATAL ABSTINENCE SYNDROME

**Dose given q 3 - 4 hrs with feeds; do not exceed 4 hrs between doses
Morphine (0.04mg/0.1ml)**

Score Dose For Initiation

0-8 0 None

9-12 0.04 mg/dose

13-16 0.08 mg/dose

17-20 0.12 mg/dose

21-24 0.16 mg/dose

25 or above 0.20mg/dose

Score Morphine Initiation:

- If neonate scores 9-12 re-score after feeding or within the hour and if re-score is 9-12 start treatment based on highest score. If re-score is 0-8, do not initiate treatment.
- If initial score is 13 or greater, start treatment immediately without reassessment.

Morphine Maintenance/Escalation

- Maintain dose if score 0-8
- Increase dose by 0.02 if score is 9-12 (rescore before dosing)
- Increase dose by 0.04 if score 13-16
- Increase score by 0.06 if score 17-20

Weaning Instructions:

- Maintain on dose 48 hrs before starting weaning
- Wean 0.02 mg morphine every day for a score is 0-8
- Defer wean for score 9-12

Re-escalation

- If neonate scores 9-12 re-score as described for initiation,
- If second score is in 9-12 increase morphine 0.01 mg q3-4 hrs
- If 2 consecutive scores 13-16, increase 0.02 mg q3-4 hrs
- If 2 consecutive scores in 17-20, increase 0.04 mg q3-4 hrs etc

Timing of Scoring: Hospitalized infants scored every 3-4 hrs before feeds. **Reassessment** Occurs immediately after feeds or within 1 hour.

Oxygen saturation and respiratory rate assessed 30-60 minutes after first two doses and after any dose escalation

Adapted from MOTHER TRIAL: Jones HE, Kaltenbach K, Heil SH, et al. Neonatal abstinence syndrome after methadone or buprenorphine exposure. N Engl J Med 2010;363:2320-31.