The University of New Mexico
Department of Family and Community Medicine*

Maternal** and Newborn Clinical Care Guidelines

UPDATED October 2023
by UNM FM MCH faculty

(Adapted from the Guide to OB Care at Zuni, 2002 by Larry Leeman; Revised by UNM MCH Faculty 2006, 2009, 2011, 2014-2020, 2023)

***These Guidelines are meant for use exclusively at the University of New Mexico Hospital and Affiliated Clinics**

****We recognize that not every person who delivers a baby identifies as a woman, and are altering language as appropriate**

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GUIDE TO MCH Care

The following guidelines are presented to enhance the quality and to provide uniformity in the approach to care during pregnancy, postpartum and for the newborn on the family medicine service. These guidelines are not rigid and may be modified as indicated for individual patients.

For additional clinical guidelines specific to UNM, refer to the UNM Obstetrics & Gynecology SOPs at http://unmobgyn.pbworks.com/w/page/83785075/FrontPage

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I. PREGNANCY TEST RESULT PROTOCOL

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

A. Negative pregnancy test

Determine if conception is desired.

1. Conception is desired
   - Offer to schedule the patient for preconception counseling with FM faculty or upper level residents, which should include screening for diabetes, hypertension, rubella, substance abuse, offering carrier screening, STI's, and other perinatal risk factors.
   - Prescribe and recommend prenatal vitamins containing at least 400 mcg of folic acid.
2. Conception is not desired
   - Offer to schedule an appointment for contraceptive counseling, or per provider discretion may offer any contraceptive at that time.

- Offer emergency contraception, foam, and/or condoms if not interested in another contraceptive or to bridge to follow-up appointment.

B. Positive pregnancy test

1. Pregnancy desired
   - Do a brief overview of the problem list and current medicines to detect problems needing urgent evaluation (e.g. active substance use, use of teratogenic medicines, history of ectopic pregnancy, diabetes mellitus, etc.).
   - Obtain prenatal lab work and schedule first prenatal visit with the patient's preferred provider.
   - Recommend and order prenatal vitamins.
   - Order dating ultrasound if indicated.
2. Undesired pregnancy
   - Discuss options including pregnancy termination and adoption.
   - Offer referral for abortion.

UNM Center for Reproductive Health by telephone or Ad Hoc in PowerChart (925-4455)

II. THE FIRST PRENATAL VISIT

The following outlines what should be discussed at the first visit and is not meant as a comprehensive review of how to initiate prenatal care. The history can be completed by an RN prenatal intake visit and then reviewed by the provider at the first visit with the patient.

Please review the UNM Standardized Prenatal Care Guidelines for prenatal care recommendations available on the FM wiki or at:
http://unmobgyn.pbworks.com/w/file/fetch/102225706/Prenatal Approach Standard.pdf

A. The History

1. Determine if pregnancy was planned and whether or not the patient wants to continue the pregnancy.
2. Dating information – Last menstrual period if regular menses and relationship known to recent hormonal birth control or miscarriage/abortion. See dating below
3. Past medical history, surgical history, gynecologic history including STIs especially HSV, family history with emphasis on DVT/PEs, congenital birth defects, deafness or genetic syndromes.
4. Medications and Allergies: Use of medicines that may be contraindicated in pregnancy (e.g. ACE inhibitors, PCN allergy and GBS+). Can look up medications on InfantRisk (app available for purchase, toll-free number to call) or LactMed.
5. Prenatal history: Emphasis on history of gestational diabetes, preterm deliveries, hypertensive disorders, hemorrhage, perineal lacerations, shoulder dystocia, perinatal depression, and prior cesarean delivery. Obtain specifics for prior SABs and TABs (passed spontaneously, D&C, gestational age, etc). TOC

6. Social history: partner and family involvement/support, custody issues with previous children, housing, food security and referral to WIC, screening for IPV, employment and parental leave, tobacco, alcohol, and recreational drug abuse.
7. Acceptance of blood products: If a patient is planning to decline blood products thorough counseling is recommended. Please refer the patient to the MCH fellow antenatally and add to the co-follow list. UNM SOP on Women Refusing Blood Products.

B. The Physical Exam
1. Includes height, weight, and BMI, exam of thyroid, breast/chest if concerns or if have never breast/chestfed previously, lungs, heart, abdomen, extremities and pelvic exam if indicated.
2. Important to note if elevated blood pressure, as this suggests 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 the patient presents after 20 weeks estimated gestational age. Caution should be taken when reviewing isolated blood pressures in EMR without access to information regarding the technique to retrospectively diagnose chronic hypertension.

C. Documentation
1. Document all information above, often in an H&P format.
2. Create a problem list. The problem list is an extremely useful way of keeping track of patients with numerous problems, especially when multiple providers see patients.
3. Document genetic screening counseling, both aneuploidy and carrier screening.
4. Recommend that patient to apply for WIC services.
5. 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. Patients with a 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 a first trimester dating US as routine first trimester US has been shown to decrease the proportion of patients requiring late-term surveillance and induction. The recommended time frame is 7-11 weeks of pregnancy.
6. Document counseling regarding foods, medications, and activities to avoid; weight gain; prenatal vitamin usage; tips for nausea and vomiting. A comprehensive list can be found under the patient education tab.
7. Order prenatal labs. Consider the following risk based labs (TSH, hemoglobin electrophoresis, baseline PIH labs including urine protein:creatinine ratio)
8. Document whether or not a patient is a candidate for aspirin starting at 12 weeks.

D. Patient Education at UNM
- Review the UNM standard prenatal guidelines for counseling topics based on gestational age.

- Patient Education handouts for each trimester as well as many other topics can be found here. These can also be found in Powerchart patient education and sent to patients on the portal. https://hsc.unm.edu/health/patient-care/womens-health/patient-education.html
- UNM has its own birth preferences form that can be reviewed with patients prior to their birth in prenatal care.
- Refer your patient to FirstDroplets.com for breastfeeding education.

E. Prenatal Visit Schedule

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.

F. Offer UNM home visiting programs such as Nurse Family Partnership

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III. ALCOHOL AND DRUG SCREENING

A. All patients should be screened for alcohol and drug use in pregnancy. Screening should not be based on risk factors.

Research shows that simply asking patients about their use has a very low sensitivity/specificity. Specific screens have much greater sensitivity.

UNM has adopted the 5 P's for screening.

5 P's substance abuse screen in pregnancy	No	Yes
1. Did any of your **P**arents have problems with alcohol or drug use?		
2. Do any of your friends (**P**eers) have problems with alcohol or drug use?		
3. Does your **P**artner have a problem with alcohol or drug use?		
4. Before you were pregnant did you have problems with alcohol or drug use? (**P**ast)		
5. In the past month, did you drink beer, wine or liquor, or use other drugs? (**P**regnancy)		

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.

UNM Milagro and Focus Programs

Patients identified with significant drug or alcohol use should be offered referral to the UNM Milagro Program. Patients requiring methadone or buprenorphine maintenance should receive their primary prenatal care through Milagro clinics. The FOCUS Clinic offers well childcare 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 residents, fellows, or attendings.

IV. PRENATAL LABS

A. First Visit
1. CBC
2. Blood Type and Rh
3. Antibody Screen
4. Clean Catch UA & culture
5. TPAB for syphilis
6. Rubella IgG Titer/Immunity
7. Varicella IgG Titer/Immunity
8. HB_sAg**
9. HIV
10. Hepatitis C antibody (prenatal order set has reflex to viral load, if Ab positive)
11. HbA1c
12. GC/Chlamydia: urine or cervical specimen if also doing a pelvic exam
13. Pap smear when indicated based on age (21 and over) and timing of last pap
14. Wet prep or VagPCR probe: At UNM, routine wet prep or VagPCR probe collection is not recommended. Collect if indicated due to symptoms or at high risk of preterm birth (previous preterm birth, multiple gestation).

15. TSH based on risk factors – see below
16. Genetic and carrier screening if desired (see below)
17. Hemoglobin electrophoresis if indicated (if carrier screening is performed, this is not needed since it's included in the carrier screening panel)
18. Baseline PIH labs (platelets, creatinine, AST and ALT, urine protein, urine creatinine, uric acid, LDH) if history of preeclampsia or at risk for preeclampsia

B. 24-28 week
1. One-hour Glucola (50 g) *
2. Hct
3. Rhogam work-up if RH neg
4. Repeat TPAB (recommended 28-32 weeks)

C. 36-37 Weeks
1. GBS culture
2. Repeat HIV, TPAB, HCV, GC/CT if at high risk for STIs

*Some clinics may do a two-hour Glucola test instead of a one-hour test
**As of 2023 CDC recommends all adults aged 18 and older have a triple panel test which includes HBsAg, anti-HBs and anti-HBc. Pregnant patients who have previously had the triple panel test without new exposure to HBV only need HBsAG screening. https://www.cdc.gov/hepatitis/hbv/testingchronic.htm

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V. CO-FOLLOW

The following patients should be referred to the UNM co-follow list for co-management by our MCH fellows and FMOB consultants.

A Powerchart message should be sent to our fellows to have them add her to the list.

- GDMA2, DM1, or DM2
- Chronic HTN on medications
- **TOLAC for delivery planning**
- Preeclampsia with expectant management
- H/o preterm delivery
- Short cervix in current pregnancy
- Significant abdominal/pelvic surgical history
- BMI > 45
- Hyperthyroidism

- SLE or other rheumatologic disease/connective tissue disorder
- H/o or current VTE or hypercoagulable disorder on anticoagulation
- Antiphospholipid antibody syndrome
- Cholestasis of pregnancy
- Severe anemia (Hct < 30)
- Placenta previa
- Cardiac disease
- Multiple sclerosis
- Seizure disorder
- Syphilis
- HIV
- Fetal growth restriction
- Fetal anomalies – abnormal genetic screen or US findings
- Twins
- Allo-immunization (positive antibody screen)
- Patients Refusing Blood Products
- Any other high-risk pregnancy complications

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VI. GENETIC SCREENING

https://www.acog.org/womens-health/faqs/prenatal-genetic-screening-tests

A. **Genetic screening and diagnostic testing** should be offered to **all** patients regardless of risk factors (document if declined). Most infants with chromosomal abnormalities are born to low-risk, young parents. Younger patients are at higher risk for microdeletions syndromes than for aneuploidy.
B. Earlier testing is preferred to arrange for termination prior to viability in the case of confirmed genetic or anatomic abnormality.
C. Screening tests screen for trisomy 21, trisomy 18, trisomy 13 (depending on the test) and neural tube defects. cfDNA can also screen for microdeletions, but microdeletions are best tested for with a microarray from a diagnostic test (CVS or amniocentesis).
D. Diagnostic tests are chorionic villus sampling (CVS) done from ~ 10-13 weeks and amniocentesis after 15 weeks. They are “invasive” tests with a small risk of fetal loss.

Genetic screening is strongly recommended for patients with:

1. Family history of anencephaly
2. History of fetal anomaly
3. History of neural tube defect (NTD)
4. Diagnosis of pre-gestational diabetes mellitus (DM1/DM2)
5. Family history of Down's syndrome

Table 1. Chromosomal Abnormalities in Second-Trimester Pregnancies Based on Maternal Age at Term

	Trisomy 21	Trisomy 18	Trisomy 13	Sex Chromosome Aneuploidy (XXX, XY, XYY, 45, X)	Microarray or Rare Chromosomal Abnormality	All Chromosomal Abnormalities
Age 20	8 per 10,000 1 in 1,250	2 per 10,000 1 in 5,000	1 per 10,000 1 in 10,000	34 per 10,000 1 in 294	37 per 10,000 1 in 270	82 per 10,000 1 in 122
Age 25	10 per 10,000 1 in 1,000	2 per 10,000 1 in 5,000	1 per 10,000 1 in 10,000	34 per 10,000 1 in 294	37 per 10,000 1 in 270	84 per 10,000 1 in 119
Age 30	14 per 10,000 1 in 714	4 per 10,000 1 in 2,500	2 per 10,000 1 in 5,000	34 per 10,000 1 in 294	37 per 10,000 1 in 270	91 per 10,000 1 in 110
Age 35	34 per 10,000 1 in 294	9 per 10,000 1 in 1,111	4 per 10,000 1 in 2,500	35 per 10,000 1 in 285	37 per 10,000 1 in 270	119 per 10,000 1 in 84
Age 40	116 per 10,000 1 in 86	30 per 10,000 1 in 333	14 per 10,000 1 in 714	51 per 10,000 1 in 196	37 per 10,000 1 in 270	248 per 10,000 1 in 40

From ACOG Practice Bulletin Aug 2020 Screening for Fetal Chromosomal Abnormalities

Table 2. Characteristics, Advantages, and Disadvantages of Common Screening Tests for Chromosomal Abnormalities

Screening Approach	Approximate Gestational Age Range for Screening (Weeks)	Detection Rate (DR) for Trisomy 21 (%)	Screen Positive Rate* (%)	Advantages	Disadvantages	Method
Cell-free DNA†	9–10 to term	99	2–4% Includes inability to obtain results, which is associated with increased risk†	1. Highest DR 2. Can be performed at any gestational age after 9–10 weeks 3. Lowest false-positive rate	Results may reflect underlying maternal aneuploidy or maternal disease	Several molecular methods
First trimester‡	10–13 6/7§	82–87‖	5	1. Early screening 2. Single time point test	Lower DR than tests with first and second trimester component NT required	NT+PAPP-A, free beta hCG, +/− AFP¶
Quad screen‡	15–22	81	5	1. Single time point test 2. No specialized US required	Lower DR than first trimester and first and second trimester combined tests	hCG, AFP, uE3, DIA
Integrated‡	10–13 6/7§, then 15–22	96	5	High DR	Two samples needed No first-trimester results NT required	NT+PAPP-A, then quad screen
Serum integrated‡	10–13 6/7§, then 15–22	88	5	1. DR compares favorably with first-trimester screening 2. No specialized US required	Two samples needed No first-trimester results	PAPP-A + quad screen
Sequential#: stepwise	10–13 6/7§, then 15–22	95	5	1. First-trimester results provided 2. Comparable performance to integrated, but FTS results provided	Two samples needed NT required	NT+ free beta hCG + PAPP-A, +/− AFP¶, then quad screen
Contingent screening**		88–94	5	First-trimester test result: Positive: diagnostic test or cell-free DNA offered Negative: no further testing Intermediate: second-trimester test offered Final: risk assessment incorporates first- and second-trimester results	Possibly two samples needed NT required	NT+hCG+ PAPP-A, +/− AFP¶, then quad screen

From ACOG Practice Bulletin Aug 2020 Screening for Fetal Chromosomal Abnormalities

E. CARRIER SCREENING
Carrier screening only needs to be done once per lifetime, and not per pregnancy. If it is abnormal, the next step is often testing the father of the baby for the specific syndrome. More information is available in the ACOG bulletin.

Recommendations from UNM MFM as of 2023:

Aneuploidy screening: Panorama test (without microdeletions)

- UNM MFM recommends the following the example from California (https://www.cdph.ca.gov/Programs/CFH/DGDS/Pages/pns/Summary-of-California-Prenatal-Screening-Tests.aspx) and many other organizations in offering NIPT as the standard option for aneuploidy screening. While no test is perfect, when combined with the 1st trimester anatomy/NT evaluation—and when considering the improved access to care, counseling, and equity that standardization brings, that NIPT should be the standard for the UNM and UNM-affiliated community.
- Tricore offers an NIPT based on the Illumina system but our best information indicates that the SNP-array technology used by the Panorama (Natera) test provides a superior test (for most patients). There will be some patients (especially with weight >350 lbs.) who may need the Illumina system but those should be guided by our genetic counselors as exceptions.
- The microdeletions including the 22q11.2 DiGeorge tests have a high false positive rate with poor positive predictive value and lead to unnecessary risks. To be used in conjunction with genetic counseling.
- Any patient may request Chorionic Villus Sampling or Amniocentesis in place of aneuploidy screening.
- High risk conditions will be guided through the genetic counseling system.

Neural tube defect screening: maternal serum AFP level and anatomy ultrasound

- Tricore test MSAFP to be ordered between 15w0d and 21w6d.
- Spine and abdominal wall evaluation are standard views in our anatomy ultrasounds and should be performed 18-22 weeks or as soon as possible.

Carrier screening: Horizon 14 Pan-Ethnic Panel

- This test includes evaluation for Cystic fibrosis (CF), spinal muscular atrophy (SMA), Duchenne muscular dystrophy, fragile X syndrome (horizon 4) as well as alpha and beta hemoglobinopathies (thus replacing the hemoglobin electrophoresis) as well as some more conditions that have greater incidence in more diverse populations (CF and SMA only screening is very white-centric). These conditions include: Canavan disease, Familial dysautonomia, galactosemia, gaucher disease, medium chain acyl-CoA dehydrogenase deficiency, autosomal recessive polycystic kidney disease smith-lemli-opitz syndrome, Tay Sachs disease.
- This will move towards more racially-just carrier screening but this will need continued evaluation and consideration of our indigenous communities with possible need for expansion.
- Tricore offers cystic fibrosis testing which does not meet the standard of care and is incomplete—they have no plan to expand this offering. They send everything else out and have no plans to change this either. They do not provide the needed testing.

- Co-testing for carrier screening and aneuploidy screening is available through Natera.
- Most insurers are paying for this test.

The following workflow for each prenatal care service is recommended with some modifications for site-specific needs:

- Provider counsels the patient on aneuploidy and carrier screening.
  - Training to be provided by genetic counselors.
  - Handouts, videos, etc. to be provided by the UNM Perinatal Genetics team with possible use of Natera resources.
  - Referrals placed to UNM Genetic counseling or Natera genetic counseling (specific indicators pending.)
- Each clinic team/provider places the order for the desired tests
  - Natera team will perform all prior authorizations and coordinate with patients who receive bills.
  - Complicated testing beyond the low-risk standard will be handled by the Perinatal Genetics Team.
- Blood draws: will be a little different at different clinics
  - Eubank and UNM clinics: Currently if placed as a misref order Tricore is doing a courtesy draw and arranging pickup for the kits. Currently this relationship does not mean billing goes through Tricore which allows transparency in billing and use of the compassionate care service.
- Following up of results
  - Each clinic site already has a dedicated account in the Natera Connect Portal and will determine the best way to follow-up results, print them, and have them scanned into the chart.
  - Each clinic will report normal results to the patients and when there are abnormal results will call the patients and provide referral to genetic counseling/MFM.
  - Perinatal Genetics and MFM will have access to all provider portals and help coordinate timely review and management of abnormal results.

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VII. ULTRASOUNDS

A. Dating ultrasounds are ideally done between 7-11 weeks. If history of prior ectopic pregnancy or PID, order earlier ultrasound at approximately 6 to 7 weeks EGA.
B. Pregnant patients desiring first trimester genetic screening for trisomy 21 sequential screening is often performed with an ultrasound with measurement of nuchal translucency. This ultrasound is done locally between 11 4/7 and 13 6/7 weeks. Patients planning on this screening should have an earlier first trimester US if there is any question about the dating to ensure proper timing of the genetic ultrasound and serum marker test. At UNM, these patients are referred to Women's Imaging.

C. Anatomic Survey ultrasound ordered ideally between 18-21 weeks. At UNM, pregnant patients opting for a first trimester screen will automatically be scheduled for their anatomic survey.
D. Genetic ultrasounds are recommended for advanced age(> or = 35), history of anomalies in a prior pregnancy, abnormal first trimester screening, abnormal triple or quad screen, pre-gestational diabetes.
E. Cervical Length: Patients have the option of having a transvaginal cervical length US at the time of their anatomic survey to assess their risk of preterm delivery. Those with a short cervix (<20mm) should be offered progesterone. See guidelines on Preterm Delivery.

F. Order additional ultrasounds if:

1. History of preterm delivery in a prior pregnancy: Cervical length at 16,18, 20 and 22 weeks with referral to cerclage if cervix is <2.5 cm is recommended . If nonspecific history, it may be appropriate to screen at 16 and 20-22 weeks.
2. Late Term (41 0/7- 41 6/7 weeks): check maximum vertical pocket (MVP) with each NST.
3. Gestational diabetes q 4 weeks after diagnosis.
4. Antepartum hypertension: growth with dopplers q 4 weeks starting at 24-26 weeks.
5. Fetal growth restriction: growth q 3-4 weeks with Dopplers q week starting at diagnosis.
6. 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). Mono/di twins are recommended to have weekly MVP from 32 weeks as part of their antenatal surveillance.
7. Obesity (BMI > 40): serial growth US recommended as fundal heights are inaccurate. May order at a lower BMI if measuring fundal height is difficult.
8. AMA: growth US at 34 weeks.
9. Substance use: growth at 28 and 34 weeks or q 4 weeks if stimulant use.
10. Other indications: e.g. size/dates discrepancy, uncertain presentation (may be referred to fetal testing for US for presentation), vaginal bleeding, etc.This is not comprehensive and ultrasounds may be recommended for medical indications.

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VIII. DATING

To determine an EDD (Estimated Due Date): If LMP is certain (regular periods with no SAB/TAB or hormonal contraception in 3 months prior to LMP), ACOG recommends using Table 1 for dating based on LMP and Ultrasound. If LMP is not reliable then use ultrasound.

Another option is 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 the range for the Haddock rule or in Table 1, then use the ultrasound date.

At UNM we often use the EDD from the US, even with a sure LMP. However, not all practices 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 FGR. Please see the UNM MFM Dating protocol for more details.

Table 1. Guidelines for Redating Based on Ultrasonography

Gestational Age Range*	Method of Measurement	Discrepancy Between Ultrasound Dating and LMP Dating That Supports Redating
≤13 6/7 wk	CRL	
• ≤ 8 6/7 wk		More than 5 d
• 9 0/7 wk to 13 6/7 wk		More than 7 d
14 0/7 wk to 15 6/7 wk	BPD, HC, AC, FL	More than 7 d
16 0/7 wk to 21 6/7 wk	BPD, HC, AC, FL	More than 10 d
22 0/7 wk to 27 6/7 wk	BPD, HC, AC, FL	More than 14 d
†28 0/7 wk and beyond	BPD, HC, AC, FL	More than 21 d

Abbreviations: AC, abdominal circumference; BPD, biparietal diameter; CRL, crown–rump length; FL, femur length; HC, head circumference; LMP, last menstrual period.

*Based on LMP

†Because of the risk of redating a small fetus that may be growth restricted, management decisions based on third-trimester ultrasonography alone are especially problematic and need to be guided by careful consideration of the entire clinical picture and close surveillance.

ACOG Committee Opinion No 579. Method for Estimating Due Date

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IX. NST/MVP/BPP

Antenatal testing is used to assess fetal wellbeing when there is a concern for an increased risk of stillbirth. Tests are based on the theory that the fetus responds to slow progressive hypoxemia with detectable biophysical changes. ACOG recommends antenatal testing for pregnancies with a stillbirth rate greater than 0.8 per 1000 and an odds of stillbirth >2.0 compared with those without the same condition (the false negative rate of the Biophysical profile (BPP). below is modified from ACOG Committee Opinion 828/June2021.
https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/06/indications-for-outpatient-antenatal-fetal-surveillance

A. Antenatal testing (usually using NST and MVP aka modified BPP or BPP) is recommended for:

CONDITION	NST	MVP	START AT
Late Term (≥41 weeks)	1-2 x q week	1-2 x q week	41 weeks
Oligohydramnios	1-2 x q week	1-2 x q week	At diagnosis
Gestational hypertension or Preeclampsia without SF	2 x q week	2 x q week	At diagnosis
FGR	1-2 x q week	1-2 x q week	At diagnosis
Stimulant use	1 x q week	1 x q week	34 weeks
Chronic HTN controlled with medication	q week	q week	32 weeks
IVF	q week	q week	36 weeks
GDMA2-insulin on oral medicines	1-2 x q week	1-2 x q week	32 weeks
Pregestational or /GDM – poor control	2 x q week	2 x q week	30-32 weeks
Previous unexplained IUFD	1-2 x q week	1-2 q week	32 weeks(individualize if before 32 weeks
Renal disease/SLE/ antiphospholipid antibody syndrome/Cholestasis	1-2 x q week	1-2 q week	32 weeks or if later at diagnosis
AMA, elevated BMI, fetal anomalies, complicated twins, elevated UAD	individualized	individualized	individualized
Twins di-di	q week	q week	36 weeks

Twins mono-di	q week	q week	32 weeks

B. At UNM, Fetal testing is performed in the Eubank Women's clinic. To schedule fetal testing, complete an AdHoc OB/GYN and Women's Health Consult. Select MFM, Ultrasound and Fetal Testing form, then call the UNM Women's Health clinic on Eubank at 272-6611 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.

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 acceleration for 10 seconds meets criteria. .
   - 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 acoustically stimulate the fetus and monitor again. If after the second twenty minutes the monitoring still does not meet criteria, then the test is complete and labeled "nonreactive."

2. Biophysical Profile

   The biophysical profile (BPP) is an antepartum technique of assessing fetal wellbeing that is performed with ultrasound. It may be used as the primary method of antepartum surveillance or used when an NST is 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 BPP 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 ≥of 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 the hand for example is 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 ≥ 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]	maximum vertical pocket ≥ 2cm	no maximum 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 score[80]

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.

G. Amniotic Fluid Volume Assessment (Measurements in late second and third trimester):
   1. Should be assessed using the maximum vertical pocket (MVP) which is the preferred method over AFI.
   2. To be a measurable pocket with either method, it must be at **least 1 cm in width**.
   3. Maximum vertical pocket is preferred since it will result in fewer interventions without differences in outcomes.
      a. Maximum vertical pocket
         i. Oligohydramnios < 2 cm
         ii. Polyhydramnios ≥ 8 cm

Fetal Imaging, Obstetrics & Gynecology, May 2014

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X. GUIDELINES FOR CONSULTATION AND CARE OF LABOR AND DELIVERY PATIENTS

BACKGROUND

The University of New Mexico Hospital offers care on Labor and Delivery through an L&D collaborative service model. The types of providers caring for patients on Labor and Delivery include the following: OB/GYN/ Maternal Fetal Medicine (OB/GYN/MFM), Maternal Child Health/Family Medicine (MCH), and Certified Nurse Midwives (CNM).

In order to ensure patient safety and appropriate communication between providers, clear, documented communications are needed. Consultations and collaboration between providers should be obtained based on patient and fetal conditions with the goal of providing safe, patient-centered and evidence-based care.

The principles of consultation are outlined in the ACOG Committee Opinion, Seeking and Giving Consultation, reaffirmed in 2013. The Committee Opinion states that consultations should "reflect fairness, honesty, and integrity, sharing a mutual respect and concern for the patient" and the consultative relationship should ultimately "serve the best interests of [the] patients."

While informal consultation regarding ongoing conditions on Labor and Delivery have been common (which antibiotics, etc.), miscommunications can result. Formal documented consultation is recommended as per the categories described below to optimize patient safety and quality of care. This document discusses appropriate candidates for consultations and how these communications should be requested. All consultations should be formally requested and appropriately documented in the note.

OBJECTIVE

To improve collaboration and communication between the OB/GYN, MFM, MCH, and CNM providers to ensure patient safety and standard of care.

DEFINITIONS

Types of Providers

This document includes reference to the following types of providers:

OB/GYN Attending: Faculty members of the OB/GYN department.

Maternal Child Health (MCH) Attending: Family physicians credentialed for low and moderate risk maternity, newborn care, and adult medicine.

FMOB Attending: Family physicians that are fellowship trained or have the equivalency of fellowship training and can care for more complex medical and surgical patients.

Milagro Attending: Physicians with extensive pregnancy addiction medicine experience that consult on pregnant/ postpartum patients with substance use disorders. Some of these providers are dual boarded in addiction medicine. These are usually FMOB Attendings and their role in Tiger is FMOB/ Milagro Attending.

Maternal Child Health (MCH) Fellow: Family physicians training to obtain advanced obstetric and neonatal skills in order to care for complex medical and surgery patients.

Maternal Fetal Medicine (MFM) Attending:
MFM has advanced training and skills in managing complicated medical obstetric patients. MFM values its role in working together and providing consultation for delivery and intrapartum management and is committed to timely documentation of its recommendations in the medical record.
Maternal Fetal Medicine (MFM) Fellow:
Physician who has completed OB/GYN residency and is now receiving subspecialty training in Maternal Fetal Medicine in the University of New Mexico Department of Obstetrics and Gynecology.

Levels of Consultation

The following levels of consultation are adapted from the ACOG Committee Opinion and the Society for Maternal Fetal Medicine guidelines for care:

Informal interaction (i.e. curbside consult): Involves informal exchange of information and no documentation is required. Should be used for general inquiry and educational exchange.

Single visit consultation: Involves examination of the patient or medical chart or performance of diagnostic tests or therapeutic procedures. Findings or procedures are documented in the medical record and subsequent care continues to be provided by the referring provider.

Continuing collaboration: Describes a relationship in which a consultant provides on-going care in conjunction with the referring provider, thus assumes at least partial responsibility for patient's care. (i.e. MFM attending or OB/GYN attending provides periodic assessment and referring provider (i.e., MCH attending or consultant) continues primary management)

Transfer of Care: A transfer of primary clinical responsibility is appropriate if the management is outside the scope of the referring practitioner's experience and training or if the referring practitioner is unavailable for immediate management. (i.e. OB/GYN Attending assumes care of a patient during an emergent or urgent situation if the FMOB Attending is not immediately available)

OUTPATIENT CONSULTS

Guiding principles for outpatient consultations:
Early outpatient consultation improves outcomes compared to delaying consultation until the inpatient phase of care, and early outpatient consultation is greatly encouraged by the MFM service and the / department. The MFM division is committed to ensuring adequate outpatient availability to facilitate consultation early in pregnancy before complications become emergent. Although some patients have established relationships with other perinatal groups that they want to continue, using UNM MFM for outpatient consultations whenever possible can facilitate management of care on Labor and Delivery. If a UNM MFM consultation is not available in an appropriate time frame, the referring provider may gain immediate assistance through the MFM fellow or faculty on call. MFM consultation and ultrasound at UNM is covered by the high-risk fund.

Single Visit Consultation with MFM
MCH attendings, FMOB attendings and OB/GYN attendings should obtain a *single visit* MFM consultation for conditions such as the following— This should be obtained antepartum as an MFM clinic consultation to improve outcomes and facilitate planning for delivery. If further inpatient consultation is needed, this will be documented in the outpatient consultation. If no antepartum consultation can be obtained, then MFM should be consulted when the patient is inpatient. MFM will document their recommendation regarding transfer of care or continuing collaboration in their consult note (these are adapted from SMFM recommendations):

- Cerclage
- Amniocentesis and Chorionic villus sampling
- Placental abruption
- Arrhythmias (patient and fetus)
- Congenital Heart disease
- Coronary artery disease
- Restrictive lung disease
- Tuberculosis
- Cystic fibrosis
- Parathyroid disease
- Addison's disease
- Active Inflammatory bowel disease (Ulcerative colitis; Crohn's disease)
- Pancreatitis
- Wilson's disease
- Hemoglobinopathies/Sickle cell disease
- Von Willebrand disease
- Thrombotic thrombocytopenia purpura/hemolytic uremic syndrome
- Nephropathy/Chronic renal insufficiency
- Multiple sclerosis
- Pseudotumor cerebri
- Myasthenia gravis
- Diabetes insipidus
- HIV
- Systemic Lupus Erythematosus
- Connective tissue disorders in patient including Marfan's syndrome, Ehlers Danlos (vascular type), skeletal dysplasia
- Major fetal anomalies
- Fetal infections
- Allo-immunization
- Fetal growth restriction (FGR) < 34 weeks gestational age (GA)
- Bariatric surgery other than gastric band or sleeve
- Oligohydramnios < 34 weeks GA

LABOR AND DELIVERY CONSULTS

The following guidelines provide examples of conditions or scenarios when formal consultation with the FMOB attending and/or the OB/GYN attending or MFM attending should be obtained. These guidelines clarify responsibility for consultations and transfer of care based on a number of conditions.
Not all cases are covered in this document: Based on co-morbidities and complexity (e.g., multiple comorbidities, extensive past surgical history), the OB/GYN attending may contact the MCH attending or FMOB attending to request that a consult be initiated.

Guiding Principles for the management of patients on Labor and Delivery at UNMH:

1. To ensure optimal care of all patients, all services will attend regular safety huddles and board sign-out to discuss ongoing patient care.
   As of 2023: Safety huddles between coordinating team (Attendings of MCH, OB, CNM, anesthesia and Charge Nurse) happen at 0745 and 1945 at the charge nurse desk. Another 1400 sign-out happens based on unit needs and safety huddles can be called by any member of the coordinating team as needed. Board sign-out is nursing led and held at 1000 and 2200 and includes attendings, residents, nursing staff.

2. To facilitate communication between the services, *all* attendings should attend *all* board sign-outs.

3. **If an urgent need for surgical care exists then** the OB/GYN attending will assume operative and surgical care of an MCH patient if the FMOB attending is not physically present and immediately available on labor and delivery.

4. Transfer of care between services will occur if the FMOB attending is not physically present and immediately available on labor and delivery and the patient meets criteria for Level II or Co-management. The onsite attending will make this decision.

5. Continuing collaboration and transfer of care requires chart documentation and is agreed upon between the MCH attending, FMOB consultants, OB/GYN attending and MFM attending.

6. If the MCH attending or FMOB attending consults the MFM attending/fellow for a patient on labor and delivery, MFM's recommendations should be discussed with the OB/GYN attending and upper level OB/GYN resident managing the board. Preferably, a huddle with the MFM attending, MFM fellow, FMOB or MCH attending, OB/GYN attending, and upper level OB/GYN resident managing the board should occur to discuss the MFM recommendations.

7. If the FMOB attending or MCH attending need an MFM consultation for patients on labor and delivery or if MFM is co-managing patients on labor and delivery with the MCH service, the patient should be presented at board sign-out at 7:00 am and 6:00 pm when MFM is present.

8. If there is disagreement, the teams will refer to UNMH's Algorithm to Enhance Culture of Safety for Obstetrics Care to resolve the conflict.
   https://unmhscportal.policymedical.net/policymed/api/document/show/1772/Algorithm%20to%20E

nhance%20Culture%20of%20Safety%20for%20Obstetrics%20Care?path=1772/pdf/c50c4162-44e4-41b2-8703-18e6b270068b.pdf&1692815213494#toolbar=0&navpanes=0

Level I: Single Inpatient Consultation OB/GYN or MFM Attending (FMOB may manage without consultation if primary attending)

The following are primarily for patients admitted to labor and delivery; however, consultation is also recommended in the outpatient or antepartum inpatient setting if applicable.

- Gestational diabetes type 2 (GDMA2), on insulin or oral anti-hypoglycemic*
- Type 2 diabetes*
- Venous thromboembolism or thrombophilia requiring anticoagulation*
- Cholestasis of pregnancy*
- Intrauterine growth restriction (if no prior consult) *
- Severe psychiatric diagnosis: bipolar or schizophrenia
- Maternal valvular heart disease of indeterminate or limited clinical significance
- Postpartum endometritis/puerperal fever or other post surgical complication
- Severe anemia, symptomatic, for which transfusion is recommended*
- Hypertensive disorders requiring IV antihypertensive agents #
- Preeclampsia with severe features #
- Estimated blood loss (EBL)/quantitative blood loss (QBL) >1000cc with ongoing bleeding
- Preeclampsia with severe features < 34 weeks GA, expectantly managed**
- Preterm labor or PPROM <34 weeks, expectantly managed**

* If these conditions involve the MCH fellows and FMOB Consultant during prenatal care, a telephone consultation upon admission to Labor and Delivery may be sufficient.

If they do not meet the following conditions: Cr > 1.1, persistent UOP <30, AST/ALT >2 times normal, platelets <100 or Preeclampsia/chronic hypertension requiring intravenous (IV) labetalol > 120 mg in 8 hours

MFM may determine if these patients should be transferred to their service **in collaboration with the patient and MCH team. If there is disagreement, follow UNMH conflict resolution as noted in point #8 from the *Guiding Principles* section above and the *Algorithm to Enhance Culture of Safety.*

Level II: Transfer of Care to the in-hospital FMOB Attending or OB/GYN Attending

The following are examples of conditions where the MCH attending without fellowship training should request ***a consultation by*** **the OB/GYN Attending**. The OB/GYN attending will make the determination if the patient should be cared for by the OB/GYN Attending.

If the patient is transferred to the OB/GYN Attending, the MCH fellow and resident are encouraged to participate in the care of the patient under the direction of the OB/GYN Attending. Once transferred to OB/GYN, the patient will remain with the OB/GYN service until discharge from the hospital, unless mutually agreed upon by the OB/GYN service and MCH service. If there is disagreement, follow UNMH conflict resolution as noted in point #8 from the *Guiding Principles* section above and the *Algorithm to Enhance Culture of Safety.*

- Preeclampsia with severe features and at least one of the following:
    - Cr > 1.1, persistent UOP <30
    - AST/ALT >2 times normal
    - platelets <100
    - Preeclampsia/chronic hypertension requiring intravenous (IV) labetalol > 120 mg in 8 hours
- Malpresentation (breech, brow, transverse) in labor
- Di-Di twin gestation (in active labor)
- Complicated multiple gestation (i.e. discordant growth, FGR, Mono-Di gestation) in labor
- Bleeding concerning for placental abruption
- Clinically significant valvular heart disease
- Preeclampsia with severe features < 34 weeks, in active labor
- Active preterm labor < 34 weeks
- PPROM < 34 weeks, in active labor
- Labor dystocia
    - s/p (IOL) with oxytocin and artificial rupture of membranes (AROM) x 18 hours without active labor
    - Arrest of active labor x 4 hours without cervical change despite adequate uterine activity or 6 hours of oxytocin with inadequate uterine activity and no cervical change.
    - 2nd stage with active pushing ≥ 3 hours in primip with epidural if delivery not imminent or call sooner if not making adequate progress and ≥ 3 hours in any patient.
- Category II fetal heart tones (FHT) with significant decelerations with ≥ 50% of contractions for 1 hour with moderate variability **or** significant decelerations with ≥ 50% of contractions for 30 minutes without moderate variability or accelerations (Refer to Clarke et al.)
- Category III fetal heart rate tracing
- Retained placenta requiring urgent manual removal when MCH Attending is not trained or comfortable OR retained placenta requiring urgent curettage or anesthesia

Level III: Transfer of Care to OB/GYN Attending

The following conditions will result in ***transfer of care*** **to the OB/GYN Attending unless mutually agreed between services for the patient to remain on family medicine**. In most cases the OB/GYN Attending should also request a ***continuing collaboration consult or transfer of care*** **to MFM**:

- Thyroid storm

- Known or suspected placenta accreta, increta, percreta
- Surgical care beyond cesarean section, e.g., hysterectomy, complex adnexal/pelvic surgery
- Dilated aortic root
- Cardiomyopathy or other heart failure
- Myocardial Infarction
- Atrial ventricular (AV) malformation/aneurysm
- Pulmonary hypertension
- Heart, liver, kidney transplant
- Pheochromocytoma
- Spinal cord injury
- Severe maternal morbidity: > 4 units transfusion, ICU admission*
- Type 1 diabetes, poorly controlled
- Acute Pulmonary embolism in labor
- Complicated multiple gestation (i.e. discordant growth, FGR, Mono-Di gestation) < 32 weeks GA
- Amniotic fluid embolism
- Other surgical obstetrical emergencies; (e.g. suspected uterine rupture, uterine inversion)*
- Ectopic pregnancy requiring surgery (consult should be directed to the GYN service)
- Cancer in pregnancy
- Bleeding placenta previa
- HELLP Syndrome

Co-Management with FMOB Attending and OB/GYN Attending

The OB/GYN attending will be consulted and will manage the following conditions. The FMOB attending, MCH fellow, OB/GYN senior resident will work collaboratively with the OB/GYN attending on these conditions. The attendings will discuss what team the patient will remain on based on stability and further needs of the patient. If there is disagreement, follow UNMH conflict resolution as noted in point #8 from the *Guiding Principles* section above and the *Algorithm to Enhance Culture of Safety.*

- Active severe hemorrhage (antepartum or postpartum) EBL or QBL >1500 with ongoing blood loss requiring D&C and/or uterine balloon placement

- Eclamptic seizure

- Repair of 4th degree lacerations, if the FMOB attending is not credentialed for repair (patient will remain on MCH service)

OTHER CONSULT SCENARIOS

Management of Community Birthing Transfers for patients who have a prior admitting agreement with the MCH service.

- FMOB attending will be involved in the care of all community birthing transfers
- L&D Coordinating team will be notified about all community birthing (home birth and birth center) transfers this is best communicated through TigerConnect Via the OB Triage transfer Team
- FMOB attending will be physically present and immediately available on labor and delivery for all home birth and birth center transfers that are concerning fetal monitoring, excessive vaginal bleeding, or if will likely need an operative delivery.
    - If the FMOB attending is not physically present and immediately available on labor and delivery, the onsite OB/GYN attending will make the determination if the patient should be cared for by the OB/GYN attending.
    - Please see the policy on : Community Birth Transfers to Labor and Delivery and OB Triage https://UNMH.policymedical.net/policymed/anonymous/docViewer?stoken=9d908eb3-db2a-424b-8c92-349690a4159d&dtoken=336dd7c0-b1c0-4005-a0b6-4f2021181155

Inpatient Consultation with Family Planning

OB/GYN attending and MCH or FMOB attending should obtain a Family planning consult for:

- 2nd or 3rd trimester fetal demise/Induction termination – for counseling for induction of labor (IOL) vs dilation and evacuation (D&E) per OB/GYN department SOP.

Labor & Delivery and OB Triage Ultrasound Consultation with OB/GYN or MFM

- Obstetrical ultrasound consultation may be obtained for biophysical profile, cervical length, and biometry, and diagnosis and management of first trimester vaginal bleeding, if the MCH attending or FMOB attending is not credentialed for these procedures.
- If consulted for an ultrasound, the OB/GYN Attending will document/attest the ultrasound report as a consult note using the appropriate templates.
- Full-service ultrasound is available through Women's Imaging/MFM, including detailed anatomy, transvaginal studies, biophysical profiles, and Doppler studies. A limited number of slots are reserved each day for inpatient or urgent same-day obstetrical ultrasound. If needed these procedures can be done at the bedside. Please contact the MFM fellow or attending to facilitate access to this service.

Post-operative patients previously on MCH service, but procedure performed by OB/GYN service

Postoperative and postpartum patients without significant comorbidities can be transferred back to MCH at the discretion of the OB/GYN attending. Transfer back will be clearly documented in the chart and must be communicated with nursing via both verbal and communication order in Powerchart. The OB/GYN will continue to be a surgical consultant.

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UNMH Medical Staff Bylaws

UNMH Medical Staff Hospital Consultation Policy, revised 2019.https://UNMH.policymedical.net/policymed/anonymous/docViewer?stoken=9d908eb3-db2a-424b-8c92-349690a4159d&dtoken=c50c4162-44e4-41b2-8703-18e6b270068b UNMH Algorithm to Enhance Culture of Safety for Obstetrics Care

The Joint Commission 2019 Comprehensive Accreditation Standards Manual

XI. MCH SERVICE ROLE DELINEATION

Consultation category	Clinical situation	Clinician Responsibilities
A	• IOL/latent/active labor for patients≥34 weeks • Absence of clinical situations found in categories B-E	1° service: Generalist/Resident Daily notes/orders: Generalist/Resident Consultant: None
B **Notify**	• BTL – upon admission • Active use of cocaine, amphetamines, alcohol • Pregnancies of unknown location prior to discharge from OBT • FGR (with prior consult) • Postpartum Hypertension requiring treatment	1° service: Generalist/Resident Daily notes/orders: Generalist/Resident Consultant: Fellow informed of situation
C **One Time Consultation**	• Concerning 3rd trimester bleeding • 2nd or 3rd trimester fetal demise • Preeclampsia with severe features without lab abnormalities or need for IV labetalol as listed below • GDMA2/DM2 not on insulin gtt* • GDMA2/DM2 on insulin gtt • Cholestasis of pregnancy* • New venous thromboembolism • Thrombophilia requiring anticoagulation* • FGR (if no prior consult) • Unstable, severe psychiatric diagnosis: bipolar or schizophrenia • Labor dystocia: • Concurrent concern with TOLAC • s/p IOL with oxytocin + AROM x 12 hrs w/o active labor • Concern for AOL (≥6cm) x 3 hrs with adequate uterine activity without cervical change or 5 hours of oxytocin without adequate uterine activity and no cervical change. • 2nd stage with active pushing ≥ 2 hrs if delivery is not imminent or sooner if not making adequate progress • Postsurgical endometritis or other complication • PPH >1000cc, severe anemia + sx, or considering transfusion	1° service: Generalist/Resident Daily notes/orders: Generalist/Resident Consultant: Drops consult note * May be telephone consult Consider consultation during IOL with continued inability to AROM due to ballotable presenting part
D **Consult & Follow**	• Preterm IOL/latent labor (<34 wks GA) • All Buprenorphine or Methadone starts • Chronic HTN requiring IV antihypertensive • TOLAC • Cat II FHT with sig decels >50% ctx with mod variability for 30 min or for 20 min with minimal variability or cat III FHT • Retained placenta requiring urgent removal, curettage or anesthesia	Generalist/Resident - staffs labor and signs labor notes Daily notes: Resident/Fellow Consultant: Initial consult and staffs daily progress notes
E **Transfer unless FMOB**	• Preeclampsia with severe features and at least one of the following: Cr > 1.1, persistent UOP <30, AST/ALT >2 times normal, plt <100 or PreE/cHTN requiring IV labetalol >120mg over 6 hrs • Twins with strong/regular ctx and at least 4 cm dilation • Bleeding concerning for placental abruption • ***(On above, Resident remains involved – writing notes)**** • Confirmed ectopic pregnancy receiving methotrexate • Preterm active labor/delivery (<34 wks GA) • Malpresentation/Vaginal breech • Preeclampsia w/ severe features - expectant management • PPROM undergoing antepartum/expectant management	1° service: Consultant Daily notes/orders: Consultant -General MCH team kept informed of plan - Resident encouraged to participate in delivery - Fellow @ board sign-out - Tiger texts directed to fellow

Policy on FM resident involvement with high risk antepartum patients

To enhance patient safety and learning opportunities regarding care of complex and high-risk antepartum patients:

- Senior FM residents round on Category D patients and staff with the MCH fellow. The resident should pre-round on their own (PowerChart only) and see patients with the MCH fellow when this is feasible to avoid unnecessary interruptions/awakenings for the patient.
- Interested FM interns who are not already at maximum capacity with routine postpartum and newborn care are able to round on Category D patients. The intern will pre-round on their own (PowerChart only), discuss overnight events and make patient plans with the senior resident. The FM intern and senior will then staff and see the patient together with the MCH fellow to minimize interruptions/awakenings for the patient.
- In the event that patient acuity is such that the senior resident is unable to staff and round on a Category D patient who is assigned to an intern, the senior will text the rounding MCH fellow to come up with a plan for rounding and staffing.

At the discretion of 1° service/consultant, patients may be moved to a different category. When "signing off", the consultant should document this intent as well as any specific recommendations for future care.

Revised 2023

XII. TEEN PATIENTS

A. Document "teen pregnancy" on problem list.

   Check with the school provider as there may be more information gained than just via interview, and they will have the most recent lab results. If they are at a high school that has a School Based Health Center (SBHC), there may be teen specific prenatal and parenting classes available to them. Consider a referral to New Futures local high school for pregnant and parenting teens.

B. 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.)

C. If feasible (safe relationships), encourage involvement of the father of the baby (FOB) and parents.

D. Teens should be encouraged to plan who will help during the intrapartum course, living arrangements after delivery, and childcare plans.

E. Discuss contraception during prenatal care.

F. 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.

G. Studies have shown improved infant outcomes with higher self-esteem, better coping skills, more social support (especially from family and FOB), nurse case management and higher prenatal education.

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XIII. PREGNANCY AT AGE 35 YEARS OR OLDER AT TIME OF DELIVERY

Discuss the risk of Down Syndrome and other chromosomal abnormalities. This should be discussed with all patients regardless of age. At UNM, refer to UNM prenatal genetics.

A. Offer genetic screening & counseling at initial visit with invasive (amniocentesis or chorionic villus sampling) or non-invasive methods (cell-free DNA or sequential screening), document patient's choice, and make a referral to Genetics if testing or more information on testing is desired.

B. Patients may elect to have genetic counseling and a level II ultrasound without further testing and can make that decision during their genetics appointment.

C. Amniocentesis is optimally done at 15-16 weeks' gestation. Patients who are under 13 weeks may be referred 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.

D. Chorionic Villus Sampling is available at 11-13 weeks 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.

E. Cell-free DNA: This provides direct assessment of certain fetal karyotypes (T-21, T-13, T-18, sex chromosomes, and some microdeletions) by blood screening. It is not diagnostic. This is usually covered by insurance, but often requires a prior authorization.

F. Growth US: A growth ultrasound in the third trimester for pregnancy is recommended for pregnant individuals with anticipated delivery at age 40 or older.

G. Fetal Testing & IOL: ACOG suggests offering antenatal fetal surveillance for pregnant individuals with increased risk of stillbirth. ACOG also recommends IOL between 39 0/7-39 6/7 weeks of gestation for individuals with anticipated delivery at age 40 due to increased risk of stillbirth. There is no consensus on timing of delivery and fetal surveillance for AMA from ACOG/SMFM. The risk of stillbirth at 39 weeks in those 40 years old is double that of younger patients at 39 weeks (~1 in 500 versus 1 in 1000) and similar to a younger person at 41 weeks. Fetal testing for those > or = 35 years with weekly BPP may be offered at 36 weeks after discussion with the provider and risks/benefits and is recommended if ≥ 40 years.

https://www.acog.org/clinical/clinical-guidance/obstetric-care-consensus/articles/2022/08/pregnancy-at-age-35-years-or-older.

https://www.ajog.org/action/showPdf?pii=S0002-9378%2822%2900576-2

XIV. VAGINAL BIRTH AFTER CESAREAN SECTION

All patients who have had prior cesarean sections should 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-sections early** during prenatal care. A key to VBAC success is reviewing surgical and obstetrical records. At UNM, this can be done by general MCH faculty who have comfort doing this counseling.

A. Patients who have had a single uncomplicated LTCS (low transverse cesarean section) are candidates for VBAC.

B. Patients with a prior vaginal birth have a high likelihood of VBAC and a lower risk of uterine rupture. They should be encouraged to TOLAC unless there is a specific contraindication to vaginal birth.

C. Those who have had more than one LTCS and no vaginal deliveries need a careful review of their past obstetrical history, future childbearing plans and patient preferences. Patients with 2 prior LTCS and a vaginal delivery are usually good VBAC candidates. Those with two prior cesareans should either be seen or be discussed with an FMOB attending. **Patients who have had classical C-sections, T-shaped incisions, or significant superior extensions of lower uterine segment incisions are not good VBAC candidates because of an unacceptably high risk for uterine rupture.** Low vertical incisions must be evaluated individually. Pregnant patients with unknown scar because operative report cannot be obtained 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) which can usually be discerned based on history.
Discuss with FMOB to confirm TOLAC candidate if any questions regarding candidacy.
Please notify MCH Fellow of patients planning TOLAC for delivery planning purposes.

D. 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. When the patient is admitted to L&D, this should be reassessed to consider other factors that may contribute to success. If a patient that is a TOLAC candidate presents in advanced labor, a vaginal birth may be the best option even if they had planned a scheduled c-section. When counseling patients about their options, discuss this scenario. Many patients may be willing to TOLAC if they arrive in active labor whereas other patients may want to TOLAC unless they need an induction. It is often a more complex decision. The risk of perinatal mortality/morbidity is about 1 in 1000.

E. 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 and no induction of about 0.5%. It is appropriate to readdress the decision for a TOLAC when an induction becomes indicated. **Do not use misoprostol** or other prostaglandins in patients with prior cesarean section as it increases uterine rupture risk. 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 recommended ripening/induction agent. If antepartum surveillance is normal it may be preferable to wait until 42 weeks to initiate a post-term

induction in a TOLAC candidate with an unripe cervix that cannot accommodate a Cook or foley catheter.

F. For a patient desiring TOLAC that requires an induction of labor, please discuss this with FMOB prior to scheduling the induction.

G. Please notify the MCH fellow on call when a TOLAC is admitted in labor. TOLAC requires careful ongoing evaluation. A fetal scalp monitor (internal fetal monitor) should be placed when membranes are ruptured if there is difficulty tracing fetal heart tones as sometimes the only sign of uterine rupture is fetal bradycardia. 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 patient without a prior cesarean.

H. At UNM, There is a standardized template to be completed by the team at the time of admission for TOLAC. To be included in admission H&P in assessment and plan section:

"=TOLACadmissionchecklist"

This patient has opted for TOLAC (Trial of Labor after Cesarean) – the following criteria have been met deeming her to be an appropriate candidate for this:

- Operative note has been obtained from prior cesarean section and site of incision is appropriate for TOLAC
- Risks (including uterine rupture) and benefits of VBAC (Vaginal Birth After Cesarean) have been discussed and signed patient consent is in the chart.
- Surgical consultants have been informed of patient admission to the hospital and their decision to pursue TOLAC. Consultants will be kept abreast of ongoing developments of her clinical course, especially concerns for labor dystocia.
- If induction or augmentation is necessary, the increased risk for uterine rupture (1% versus 0.5% without this situation) has been clearly discussed with the patient. Misoprostol or other prostaglandins will not be used for this process. An intrauterine pressure catheter should usually be inserted when oxytocin is being used, membranes are ruptured and a regular contraction pattern is present.
- The patient will remain on continuous fetal monitoring during labor.

AAFP article on TOLAC-VBAC
UNM L&D SOP on TOLAC

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XV. MALPRESENTATION & EXTERNAL CEPHALIC VERSION

1. Fetal presentation should be assessed at all prenatal visits > 34 weeks. If Leopold's maneuvers are not helpful to 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 the physical exam is uncertain, the patient can be referred to a fetal testing center for an US for presentation.
2. All patients who are not cephalic at 36 weeks should be counseled and referred to FMOB faculty for external cephalic version (ECV).
3. ECV is usually performed at 37 weeks but may be performed later in pregnancy with less likelihood of success. All patients should be advised to be NPO for 8 hours prior to their scheduled ECV in case an emergent C-section is needed (risk < 1 in 200).
4. Most ECVs nationwide are done without analgesia. Spinal anesthesia may increase the rate of successful ECV. The decision for use of regional anesthesia may depend on the physician's assessment of fetal mobility as well as patient preference.
5. Rhogam should be given to Rh negative patients having an ECV.
6. When ECV is unsuccessful, the patient may be a candidate for planned vaginal breech delivery if they meet clinical criteria and a physician trained in breech is available.

Contact Dr. Larry Leeman for consultations regarding vaginal breech delivery

XVI. SCHEDULED CESAREAN SECTIONS

If a patient who does not want to TOLAC, is not a TOLAC candidate, or needs a scheduled cesarean section, please contact the MCH Fellow/Consultant to schedule the cesarean section. If the patient would like to meet the surgeon beforehand, we can arrange a pre-surgical consultation appointment as well. *Please remember to tell your patient to be NPO for 8 hours before their scheduled surgery.*

At UNM, these patient handouts are available to help prepare the patient for their cesarean section and contain directions on how to clean with Hibiclens before their surgery to decrease the risk of infection. These are the links to the documents on the wiki.

- UNM Patient Education Preparing for your cesarean section
- UNM How to Clean Your Skin Before your C-section

Gentle cesarean is a name for a constellation of interventions to promote breast/chestfeeding, bonding, skin to skin, and to allow a more natural de-medicalized birth. This can include dim lighting, music, limiting personnel in the OR, presence of another support person in the OR (doula or another adult family member), watching the baby being born through a clear drape, delayed cord clamping, and bringing baby to mom right after the birth for skin to skin.

At UNM, there is an option of a Gentle Cesarean, if the patient is a candidate. SOP of Gentle Cesarean section for more information is available on the wiki.

Inclusion criteria*

- Scheduled repeat cesarean at term (38 0/7 to 41 6/7 weeks ega)
- Scheduled primary cesarean at term (38 0/7 to 41 6/7) for malpresentation or medical indications not affecting fetal status
- Primary or repeat cesarean at term for stage 1 or 2 arrest in labor with no fetal concerns on monitoring and no evidence of chorioamnionitis
- Planned scheduled repeat cesarean section, presenting in labor
- Regional anesthesia only (epidural or spinal)

Exclusion criteria*

- Prematurity/postterm (Limited to 38 0/7- to 41 6/7)
- Non-reassuring fetal status
- Non-reassuring patient status (i.e., suspected abruption, uterine rupture, preeclampsia with severe features/eclampsia, placenta previa)
- General anesthesia
- For BMI> 45, delivering physician should assess body habitus about the ability to place and assess infant before offering “gentle C/S”

If a patient is interested, they can review and sign the gentle cesarean preferences checklist. The FMOB attendings and MCH fellows *should be aware of this plan so that it can be scheduled as a gentle cesarean section*. Unfortunately, staff restrictions make it impossible to always do all of the components of a gentle cesarean, but every effort will be made to honor as many preferences as possible.

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XVII. RHO (D) IMMUNIZATION

A. If a patient 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 patient is Rho (D) negative or mosaic Rho (D), but titers reveal they are not Rho (D) isoimmunized:
   1. Note Rh status on problem list. Rh-negative patients are uncommon 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.
   4. If an anti-D antibody is detected in a patient who is Rho (D) negative, contact MCH Fellow or FMOB faculty to discuss interpretation.

D. Amniocentesis - A 300 microgram dose is given following a second or third trimester amniocentesis. These patients remain candidates for prophylaxis at 28 weeks' gestation and postpartum.

E. External Cephalic Version- A 300 microgram dose is given if there is an attempted external cephalic version. These patients remain candidates for postpartum prophylaxis.

F. Abortion (SAB and TAB) Rhogam administration is not necessary before 12 weeks per Society of Family Planning.
https://www.contraceptionjournal.org/article/S0010-7824(22)00197-4/fulltext#seccesectitle0010
A full 300-microgram dose is given to a pregnant person who aborts after 13 weeks' gestation.

G. Antepartum hemorrhage - Consider obtaining a Kleinhauer-Betke (KB) test. The KB test is useful to determine the extent to which fetal blood has entered the pregnant patient's circulation. The results can then be used to determine the correct dosage of RhoGAM. The KB test is performed whenever fetal hemorrhage is suspected, as might be the case with abdominal trauma or abruption at delivery. 20 micrograms of Rh immunoglobulin is given per calculated cc of packed Rh (D) positive cells that leaked into the pregnant patient from the fetus, e.g. the usual dose of 300 micrograms of RhoGAM protects against 15 cc of fetal cells.

H. Delivery - If infant is Rh(D) positive:
   1. The usual dose for a normal delivery is 300 micrograms if the baby is Rh positive.
   2. Lab will automatically perform a KB to give a larger amount if indicated based on this result. As previously explained above, the RhoGAM should be given within 72 hours of delivery.

I. Other indications for administration include:
   1. 300 micrograms with significant abdominal trauma without vaginal bleeding.
   2. 50 micrograms can be administered with ectopic pregnancy, sharp curettage or other invasive procedures less than 12 weeks.
   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.

J. RhoGAM does not need to be re-administered if an adequate dose has been administered within the last 21 days (unless a large fetal-patient hemorrhage is detected). Fetal cord blood can be falsely positive, so if the initial screen is positive then fetal serum should be tested. It can also be falsely positive from antepartum RhoGAM administration (weakly), ABO incompatibility, or if there is a clinically significant IgG alloantibody that crosses the placenta. A patient can demonstrate a titer of ≤ 4 with passive immunization from RhoGAM or 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 history of hypersensitivity to globulins.

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XVIII. ANTEPARTUM HYPERTENSION AND PREECLAMPSIA

See ACOG Practice Bulletins on Chronic Hypertension and Gest HTN 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. Caution should be used in using isolated BPs in the EMR w/o consideration of clinical context (e.g. such as opioid withdrawal).
2. Gestational hypertension - Elevated BP diagnosed after 20 weeks without proteinuria.
3. Preeclampsia - Elevated BP with proteinuria or *without proteinuria* if other lab abnormalities present or emergent hypertensive treatment initiated ; see below under severe features. A significant minority also present postpartum.
4. Chronic hypertension with superimposed preeclampsia - Difficult to diagnose worsening cHTN from those with superimposed preeclampsia. A sudden increase in BP above baseline or increase in proteinuria above threshold or lab abnormalities may support the diagnosis. Admission may be necessary to differentiate. Consult with FMOB and MFM.
5. Eclampsia - Convulsions or coma unrelated to known CNS disorder and with signs and symptoms of preeclampsia.
6. HELLP Syndrome - (or multisystem disease) **H**emolysis, **E**levated **L**iver enzymes, **L**ow **P**latelets.

B. Measuring Blood Pressure

Patient should rest for 10+ minutes seated with legs uncrossed and back supported. Advise no caffeine or tobacco for at least 30 minutes before the measurement. Cuff is a length 1.5 times the upper arm circumference (or a cuff with a bladder that encircles at least 80% of the arm and a width of at least 40% of arm circumference) positioned at the level of the heart.

C. Chronic Hypertension - Antenatal Treatment and Management

1. Order baseline preeclampsia labs – CBC, creatinine, AST, ALT, uric acid, LDH, urine protein/creatinine ratio. If the P/C ratio is **>/= .1**, order a 24-hour urine protein and creatinine to quantitate the degree of proteinuria.
2. Recommend aspirin 81 mg starting at 12 weeks, but do not initiate any later than 28 weeks as ineffective.

3. **Antepartum Antihypertensive Medications**: Based on the Chronic Hypertension and Pregnancy (CHAP)Trial in 2022 ACOG now recommends treating mild chronic hypertension

in pregnancy when systolic blood pressure is ≥ 140 or diastolic blood pressure is ≥ 90 reduced adverse fetal outcomes without impairing fetal growth instead of the previous recommendation to treat when the systolic blood pressure was ≥ 160 or diastolic blood pressure was ≥ 110.
https://www.nejm.org/doi/pdf/10.1056/NEJMoa2201295?articleTools=true

https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2022/04/clinical-guidance-for-the-integration-of-the-findings-of-the-chronic-hypertension-and-pregnancy-chap-study

4. Common medications used:

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

ACE inhibitors are contraindicated. Hydrochlorothiazide is rarely used but is listed as a second or third line agent.

5. Antepartum surveillance

- Serial ultrasounds q 4 weeks for fetal growth with Dopplers recommended beginning at 26 weeks.
- NSTs 2x/week beginning at 32-34 weeks. Timing of initiation depends on the degree of hypertension. If off meds and appropriate growth, may not need biweekly testing.
- MVP 1x/week (vs. 2x/week in preeclampsia).
- 20-50% will develop superimposed preeclampsia.

6. **Delivery:** Recommended ~ 38-39 weeks. Timing depends on whether she is taking medication and cervical examination, but delivery is recommended prior to the due date.

D. Prevention of Preeclampsia

1. USPSTF and ACOG recommend the following patients be offered aspirin for preeclampsia prevention. ASA 81 mg should be started at 12 weeks and optimally by 16 weeks, however, aspirin may be initiated up to 28 weeks' gestation.
https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2021/12/low-dose-aspirin-use-for-the-prevention-of-preeclampsia-and-related-morbidity-and-mortality
Table below copied from September 2021 USPSTF recommendations.

Risk Level[a]	Risk Factors	Recommendation
High[b]	• History of preeclampsia, especially when accompanied by an adverse outcome • Multifetal gestation • Chronic hypertension • Pregestational type 1 or 2 diabetes • Kidney disease • Autoimmune disease (ie, systemic lupus erythematous, antiphospholipid syndrome) • Combinations of multiple moderate-risk factors	Recommend low-dose aspirin if the patient has ≥1 of these high-risk factors

Moderate[c]	• Nulliparity • Obesity (ie, body mass index >30) • Family history of preeclampsia (ie, mother or sister) • Black persons (due to social, rather than biological, factors)[d] • Lower income[d] • Age 35 years or older • Personal history factors (eg, low birth weight or small for gestational age, previous adverse pregnancy outcome, >10-year pregnancy interval) • In vitro conception	Recommend low-dose aspirin if the patient has ≥2 moderate-risk factors Consider low-dose aspirin if the patient has 1 of these moderate-risk factors[d]
Low	Previous uncomplicated full-term delivery	Do not recommend low-dose aspirin

[a] Includes only risk factors that can be obtained from the patient's medical history.

[b] Includes single risk factors that are consistently associated with the greatest risk for preeclampsia. Preeclampsia incidence would likely be at least 8% in a population of pregnant individuals having 1 of these risk factors.

[c] These factors are independently associated with moderate risk for preeclampsia, some more consistently than others. A combination of multiple moderate-risk factors may place a pregnant person at higher risk for preeclampsia.

[d] These factors are associated with increased risk due to environmental, social, and historical inequities shaping health exposures, access to health care, and the unequal distribution of resources, not biological propensities.

2. Calcium supplementation (1.5 to 2g/day) can be considered in those with low baseline calcium intake (< 600 mg/day).

E. Classifying Preeclampsia

1. Preeclampsia without severe features
   - SBP ≥ 140 or DBP ≥ 90 after 20 weeks' gestation in those with normal BP previously; this must be documented on two occasions at least four hours apart.
   - Proteinuria
     - > 300 mg in 24 hours or ≥0.3 on protein/creatinine ratio.
     - 2+ 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 2+ is only diagnostic if other quantitative methods are 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
   - SBP ≥ 160 or DBP ≥ 110, this can be confirmed by repeated BP in 15 minutes to facilitate timely antihypertensive therapy. Do not wait 4 hours to diagnose and treat.
   - 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.

F. Laboratory Evaluation

- CBC with platelet count
- Urine protein and Urine creatinine. Order the P/C ratio separately as STAT "protein, random urine" and STAT "creatinine, random urine" because the results return quickly. The "protein/creatinine ratio" order is sent out to Tricore and may take one day to return. This test is fine to order in prenatal care for baseline. For a 24-hour urine, order both "24-hour urine total protein- stat" and "24-hour urine total creatinine – stat".
- Serum creatinine
- AST, ALT
- Uric acid (indicator of renal function)
- LDH (indicator of microangiopathic hemolysis)

G. Management of preeclampsia or gestational HTN without severe features

1. Antenatal steroids are recommended if <34 weeks' gestation if at high risk of delivering within 7 days. Antenatal steroids should be considered for singleton pregnancies without pregestational diabetes between 34 and 36 6/7 weeks who are at high risk of delivery in the next 7 days. Per SMFM recommendation #58
   https://www.ajog.org/article/S0002-9378(21)00859-0/fulltext

2. If under 37 weeks, expectant management is indicated for preeclampsia without severe features. This should include: labs as noted above, NST/MVP, 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
   - Symptoms concerning for systemic damage (headache not relieved by ant, visual disturbance, altered state of consciousness, RUQ pain)
3. Antepartum surveillance should include:
   a. NST and MVP 2x/wk (may be once a week if gestational hypertension rather than preeclampsia)
   b. Twice weekly BP measurement and at least weekly PIH labs
   c. Daily monitoring of maternal symptoms and fetal movement by patient
   d. Serial US q 3 weeks with Dopplers

4. Timing of Delivery:
   - Usual recommendation is delivery at 37 weeks for gestational hypertension and preeclampsia without severe features if all surveillance above is normal. For gestational hypertension some recommend delivery by 38 weeks.
   - Preeclampsia with severe features delivery is recommended by 34 weeks or earlier depending on the clinical situation. Consultation with MFM recommended.

5. Intrapartum Management:
   - PreE or gestational HTN without severe features:
     a. Magnesium sulfate administered per guidelines below.
     b. PIH labs checked q 24 hours if normal, more frequently if abnormal (8-12 hr)
   - PreE with severe features or Gest HTN with severe range BP:
     a. IV Magnesium sulfate recommended
     b. PIH labs q 6 hours or more frequently pending clinical situation.

c. q 2 hr magnesium checks/notes reviewing BP & meds, FHT, UOP, respiratory rate, auscultating lungs for pulmonary edema, checking DTRs & mental status.
d. Consult MCH fellows.

H. Seizure prophylaxis with magnesium sulfate

1. Usual dose is 4g IV loading dose over 10 minutes followed by 2g/hr gtt. If elevated creatinine (>0.8) consider starting gtt at 1g/hour and follow magnesium levels. Continue the magnesium only if patellar reflex is present, respirations are >12/min and UOP >100cc q 4hr. Magnesium gtt is continued for 24 hours postpartum.
2. ***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.
3. Postpartum $MgSO_4$ is associated with a four-fold increase in postpartum hemorrhage. Postpartum oxytocin in those receiving $MgSO_4$ is strongly recommended for at least the first 6-12 hours. Methergine is contraindicated.
4. Eclamptics should be protected from injury and loaded with $MgSO_4$ 6 g bolus or if on magnesium already a 2 g bolus. Avoid giving Diazepam or Phenytoin as they sedate the patient and may precipitate need for intubation and/or increase the risk of aspiration pneumonia. Consult with FMOB and/or OB, MFM immediately upon diagnosis.
5. **Preeclampsia without severe features**: it may be recommended that a patient 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.

Table 2. Serum Magnesium Concentration and Toxicities

Serum Magnesium Concentration			
mmol/L	mEq/L	mg/dL	Effect
2–3.5	4–7	5–9	Therapeutic range
>3.5	>7	>9	Loss of patellar reflex
>5	>10	>12	Respiratory paralysis
>12.5	>25	>30	Cardiac arrest

Data from Duley L. Magnesium sulphate regimens for wom
J Obstet Gynaecol 1996;103:103–5 and Lu JF, Nightingale CH. Magnesium sulfate in eclampsia and preeclampsia: pharmacokinetic principles. Clin Pharmacokinet 2000;38:305–14.

I. Intrapartum Treatment of Severe Blood Pressure

1. Severe range BP (SBP ≥ 160 or DPB ≥ 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.

2. Call MCH fellow to come to labor and delivery when labetalol is to be given for severe range BP. *The MCH fellow should stay to manage BPs until BPs are controlled*. If more than a cumulative dose of 40 mg of labetalol is required over 4 hours, the MCH fellow should be in hospital for the next 4 hours to ensure BPs stable. FMOB and/or OB and MFM should be in the hospital managing for the following: Cr > 1.1, persistent UOP <30, AST/ALT >2 times normal, platelets <100 or Preeclampsia/chronic hypertension requiring intravenous (IV) labetalol > 120 mg in 8 hours.
3. **Treatment of Severe Range BP** – see MFM SOP on the UNM OB/GYN wiki for details on dosing for labetalol, hydralazine, and nifedipine. http://unmobgyn.pbworks.com/w/file/fetch/109241749/Antihypertensive%20Treatment%20for%20Severe%20Hypertension%20During%20Pregnancy.pdf

J. Postpartum Care in those with Hypertensive Disorders

1. ACOG recommends that patients with gestational HTN or preeclampsia be monitored for at least 72 hours postpartum for hypertension either inpatient or equivalent home monitoring if available and unlikely to need treatment (not severe, did not require antihypertensives in labor or postpartum) and again 7-10 days after delivery or earlier if symptoms.
    - Those at low risk for needing antihypertensives who have a BP cuff at home can be discharged at 48 hours with home BP monitoring. Discuss with MCH fellows and/or FMOB.
2. Persistent postpartum HTN with SBP ≥ 150 or DBP ≥ 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 patients require both nifedipine and labetalol to control their BP postpartum.
3. Patients should not be discharged until their BP is controlled SBP < 150 or DBP < 100, although there are exceptions for chronic HTN if BP is rarely above that threshold and SBP < 160 and DPB < 110. Discuss with MCH fellows and/or FMOB.

L. Patients presenting postpartum with preeclampsia

1. Those 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. Consult MCH Fellows.

See AAFP ALSO chapter on Medical Complications in Pregnancy

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XIX. GESTATIONAL AND PRE-GESTATIONAL DIABETES MELLITUS

A. Screening

1. Initial prenatal screening

Options for screening are complex and vary with local practice patterns. At UNM, it is recommended that all pregnant patients without known pre-gestational diabetes have a fasting plasma glucose, random plasma glucose, or HgBA1c at presentation for the initial screening. HbA1c is preferred when feasible.

a. If A1c ≥ 6.5%, Fasting plasma glucose (FPG) ≥ 125 mg/dl or random plasma glucose ≥ 200 mg/dl + confirmation, the diagnosis is pre-gestational diabetes and treated accordingly.
b. If FPG ≥ 92 mg/dl, but < 126 mg/dl, diagnose as GDM and treat accordingly.
c. If FPG < 92 mg/dl, test for GDM at 24-28 weeks with a one hour 50 g glucola test.
d. 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 hour 75 g glucose tolerance test (GTT) or one hour 50 g GTT 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 often defined as

- Multiple pregnancy losses
- 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 be advised to have a 50 gram (g) GTT (or alternative of 75 g fasting 2 hour GTT) at 24-28 weeks.

Option A: A 50 g glucose load is administered to the patient and plasma glucose is measured 1 hour later. **Abnormal plasma glucose at UNM ≥ 135.**

a. If abnormal, order a 3 hour GTT.
b. If any screening glucose is > 200, check a FPG next. If FPG ≥ 92, patients should be diagnosed with gestational diabetes and may begin management without undergoing 100 g glucose load.
c. The 3 hour GTT is a fasting test. Plasma glucose values are measured at fasting, then hourly for 3 hours (after a 100 g glucose load). Normal values are:
   - FPG <95
   - 1 hour <180
   - 2 hour <155
   - 3 hour <140
d. Glucose intolerance: normal FPG, one other value abnormal. Consider rechecking in 4 weeks if early in the 3rd trimester.
e. Gestational diabetes: abnormal fasting or two other abnormal values. Although a 3 hour GTT is traditional follow-up to an elevated one hour glucola, a two hour GTT (with 75 g glucose) may now be done instead (see below)

Option B: 75 g Fasting 2-hour GTT with 75 g glucose may be substituted for 50 g 1 hour glucola **(At UNM, this test is not currently being performed by local lab).** 2 hr GTT is fasting and diagnostic for GDM if single abnormal value:

- FPG ≥ 92
- 1 hour ≥180
- 2 hour ≥ 153

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

1. Refer to a nutritionist if available. Continue routine prenatal care and no need to check finger stick glucose. Patients should follow a diabetic diet as if they have diabetes.
2. Repeat 2 hr 75 g GTT or 100 g 3 hour GTT in 4 weeks but not before 24 weeks.
   - Proceed as usual as if new GDM.
   - If still glucose intolerant, continue with diabetic ed/diet, no need to repeat 3 hour GTT again.

If a patient declines glucola load, an alternative is to have them monitor blood sugar QID (see below) for 1-2 weeks, if < or = 2 abnormals over any time frame they are considered to not have gestational diabetes.

C. **GDMA1** - Management of Diet-Controlled GDM

1. Goal blood sugars:
    - FPG < 95
    - 1 hour postprandial (PP) < 140
    - 2 hour postprandial (PP) < 120 **(at UNM, prefer 2 hour checks instead of 1 hour)**
2. Advise patients to check fasting and postprandial blood sugar after each meal, QID.
3. 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.
4. Refer for diabetic diet education.
    - At UNM, this can be done by sending a Powerchart message to Suzanne Carlin, the GDM educator or order an AdHoc for OB/GYN. Select MFM consultation, then GDM. In the comments put **GDM education only otherwise they will be transferred to MFM DM clinic and they will manage**.
5. At UNM, weekly visits are recommended until CBG control is achieved, then may go to q2 week appointments until 36 weeks, then weekly again after 36 weeks.
6. Ultrasound is recommended at 36-38 weeks for estimated fetal weight, to screen for macrosomia. If > 4000 gm or > 90 percentile for estimated gestational age consider induction at 39 weeks. Please consult MCH fellows/ FMOB for questions.
7. Antenatal surveillance with twice a week NSTs starting at 40 weeks with weekly MVP if good glycemic control. If poor control, treat as requiring meds (GDMA2/DM).
8. Recommend induction at 41 weeks if good dates.
9. Consider starting medication if multiple elevated readings at the same time of day in a single week. FPG >95; 2 hour >120 in two or more values. May continue monitoring an additional week of dietary management if the issue was noncompliance with diet.

D. GDMA2 Medications

There is controversy regarding using metformin versus insulin as a first-line medication for gestational diabetes. ACOG recommends insulin first-line since it is the best studied and does not cross the placenta, as metformin does. SMFM states that metformin is a reasonable and safe first-line alternative, recognizing that 50% of patients will still require insulin to achieve control.. Studies demonstrate safety with no increased risk of birth defects, but there is less data on longer term metabolic outcomes on offspring. If there is macrosomia, insulin should be used as a first-line medication to achieve better control.Glyburide is being used less frequently due to studies showing higher birth weight, more frequent macrosomia and neonatal hypoglycemia compared to metformin and insulin.
Medications should be started with consultation with FMOB attending and /or MCH fellows or MFM DM clinic. Patients should be added to the co-follow list.

1. Oral Agents

a. **Metformin:** First line oral agent for GDM as alternative to initiating insulin. While the mechanism of metformin is not well understood, it is known to decrease gluconeogenesis in the liver and sensitize tissues to insulin uptake. Metformin does not cause hypoglycemia. Start at 500 mg po bid and increase to 1000 mg po bid or 850 mg po tid with meals.
b. **Glyburide** is an oral sulfonylurea that increases the release of insulin through stimulation of pancreatic beta cells. If metformin is not tolerated and a patient declines insulin glyburide can be used if > 12 weeks gestation . Start at 2.5 mg BID or 5 mg QD and titrate up to a maximum of 20 mg a day. Glyburide can cause hypoglycemia and patients should be educated on hypoglycemia management. **Glyburide is not a recommended first line agent for gestational diabetes, use it only in consultation with FMOB or MFM.**

2. **Insulin** (not pregestational)

Start insulin QID at 0.4-0.6 units/kg/day with a short acting insulin (Lispro/Aspart as 30% of total) with each meal and 10% as intermediate acting NPH qhs for 4x/day dosing.
Self-monitoring QID.

Glargine is a long acting insulin that is used depending on insurance coverage instead of NPH, but NPH is better studied in pregnancy and is more frequently used.

E. Antepartum Surveillance GDMA2

1. Visits weekly recommended until controlled, then can go to q 2 weeks until 36 weeks, then weekly again.
2. Ultrasound every 4 weeks at 29, 33, 37 weeks for estimated fetal weight (see above).
3. Twice weekly NSTs with MVP once a week starting at 32 weeks or BPP once a week with NST once a week.
4. Induction at ~39 weeks. It is not recommended for the pregnancy to continue beyond 39 6/7 weeks. Consider IOL at 38-39 weeks for poor control and macrosomia. Discuss with FMOB/MCH fellows.

Primary cesarean section is recommended to be offered if estimated fetal weight > 4500 g due to risk of shoulder dystocia. Consult MCH fellows and / or FMOB to counsel patients on their options.

F. Management of Pregestational DM

1. At UNM, if a patient is on an oral sulfonylurea, we recommend converting to metformin, insulin or both at time of diagnosis of pregnancy. It is acceptable to keep patients on metformin throughout pregnancy.
2. Weekly visits after 20 weeks. Frequent visits sooner if poor control.

3. Ophthalmology referral. Obtain baseline EKG.
4. Baseline Preeclampsia labs (H/H, plts, AST/ALT, uric acid, LDH, creatinine) and 24-hour urine protein at presentation to care, as patients can have baseline kidney insufficiency.
5. Recommend aspirin 81 mg at 12 weeks.
6. Obtain Hg A_1C initially and follow q 4-6 weeks.
7. Level II/Genetics ultrasound 18-20 weeks including fetal echocardiogram to confirm dates, rule out anomalies.
8. Growth US every 4 weeks starting at 24-28 weeks with one at 37-38 weeks for delivery planning.
9. Twice weekly NSTs with MVP once a week starting at 32 weeks.
10. Plan induction at 39 weeks with delivery by 40 weeks. Consider IOL 38-39 weeks for poor control and macrosomia. Discuss with FMOB and MCH fellows.
11. Offering the option of primary C-section to prevent shoulder dystocia is recommended if estimated fetal weight > 4500 g.

G. <u>Intrapartum management of GDMA2 or pre-gestational diabetics at UNM</u>

1. Consult MCH Fellow on admission.
2. Check serum blood glucose on admission.
3. Latent labor: check serum blood glucose every 2-4 hours in latent labor (depending on value) or fasting and postprandial if eating.
4. Active labor: check serum blood glucose every 1-2 hours depending on level of control (if they have been normal can check q 2 hours , more frequent if it's been high) or q 1 hour if on insulin gtt.
5. Excellent intrapartum control for at least 6 hours prior to delivery with glucose in the 70-110 range helps prevent neonatal hypoglycemia. Due to high metabolic state of labor it is rare to need insulin drip in gestational diabetics , but some DM2 may need an insulin drip.
6. At UNM, the insulin drip is controlled by Glucommander, an automated insulin management software system that calculates patient specific IV dosing based on a patient's insulin sensitivity, prescribed target blood glucose range, and continual response to insulin.

<u>H. Postpartum Management</u>

1. If GDMA2, stop diabetic meds postpartum. For DM2, decrease insulin by 50% to avoid hypoglycemia.
2. At UNM, fasting blood glucose is ordered on PPD #1. If fasting blood glucose > 150, contact MCH fellow and/ or FMOB.
3. It is recommended to screen all gestational diabetic patients with a fasting blood glucose at the 6 week postpartum visit or preferably check a 2 h GTT as well as a fasting glucose (this is a different test than the one used antepartum), and then annually to screen for DM2. Alternatively, an HBa1c may be used for the postpartum screen at twelve weeks postpartum if it makes compliance easier. Pre-gestational diabetics normally return to their pre-pregnancy medication needs. They should be followed closely in the postpartum period to adjust their medications as needed.

4. Family planning - gestational and pre-gestational diabetes: All methods of birth control are appropriate for postpartum patients who do not have any other risk factors for a 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.

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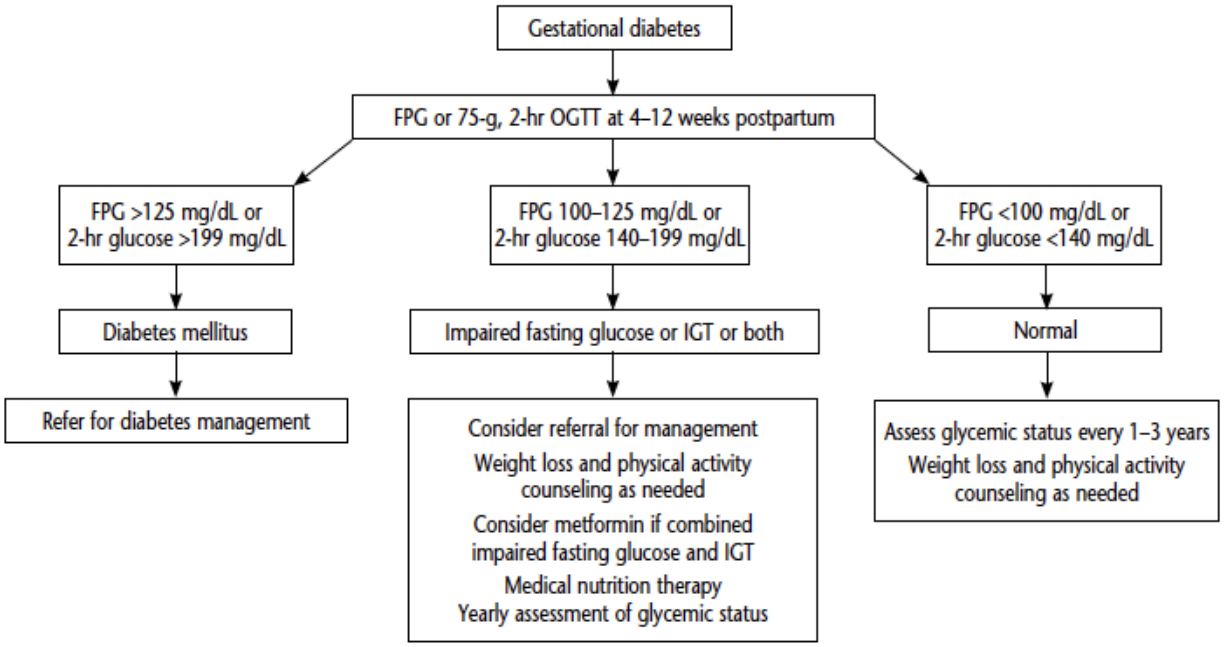

Figure 1. Management of postpartum screening results. Abbreviations: FPG, fasting plasma glucose; OGTT, oral glucose tolerance test; IGT, impaired glucose tolerance. ⇦

From ACOG PB on GDM February 2018

XX. HISTORY OF PRETERM DELIVERY OR SHORT CERVIX

A. 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. Antepartum/intrapartum infections including UTIs, amnionitis, peritonitis, group B strep
6. Cervical incompetence or uterine anomalies
7. Abruptio placenta, placenta previa, or vaginal bleeding
8. FGR, fetal malformations
9. Work with long periods of standing and long hours
10. Short interpregnancy interval (< 18 mo.)
11. Anemia
12. Extremes of age (< 20 or > or =35)

B. Prevention and Screening

1. Patients should be screened for the above risk factors and cervical dilation/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 symptoms/signs of PTL (>50% of patients who develop PTL have no risk factors).
3. Progesterone IM treatment is no longer recommended to reduce the risk of preterm delivery in those with a history of prior spontaneous preterm delivery. It was removed from the market by the Food and Drug Administration (FDA) in April 2023.
4. Those with a history of SPTD < 36 weeks' gestation:
    a. 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.
    b. Those with a history of SPTD & a CL < 25 mm can also be offered a cerclage.
    c. Cervical length US should not be ordered after 30 weeks' gestation
5. No history of SPTD:
    a. Those without a history of SPTD with a singleton gestation can be offered a screen for a short cervix with a transvaginal CL US at the 20-week anatomic US.

b. A CL ≤ 20 mm before 24 weeks gestation is associated with increased risk of SPTD and vaginal progesterone is recommended.
c. If the cervix is ≤ 20mm antenatal corticosteroids for fetal lung maturity are recommended.

6. Multiple Gestation:a CL can be offered as part of the anatomic US.
7. Progesterone Treatment:
   a. At UNM, 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 ~$50/month.
      i. Those 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. Medicaid will usually cover these if a patient cannot afford the suppositories.
   c. According to SMFM, they agree with FDA recommendation to no longer use 17-OH P IM for prevention of preterm birth; however, progesterone suppositories still may be recommended for patients with a history of shortened cervix. https://www.smfm.org/publications/467-smfm-special-statement-response-to-the-food-and-drug-administrations-withdrawal-of-17-alpha-hydroxyprogesterone-caproate
   d. It is important that patients continue progesterone until 36-37 weeks as withdrawal could potentially initiate labor. Discuss this prior to initiating therapy.

XXI. PRETERM DELIVERY LABOR EVALUATION & MANAGEMENT

A. Definitions

1. Preterm labor - prior to 37 weeks' gestation, progressive cervical dilatation and effacement or cervical dilatation ≥3, and uterine contractions > 4 in 20 minutes and > 8 in an hour.
2. "POOC" (premature onset of contractions) - onset of regular contractions prior to 37 weeks' gestation without cervical change (over a period of observation).

B. PTL Initial evaluation:

1. UA/UC
2. Vaginal cultures (wet prep, GBS, GC, chlamydia, VagPCR)
3. Sterile speculum exam for PPROM (Nitrazine, ferning). Do not perform a digital cervical exam with PPROM unless delivery is imminent.
4. External fetal heart rate and contraction monitoring.
5. Ultrasound for presentation.
6. Fetal fibronectin (fFN): If having regular contractions between 22-35 weeks obtain a fetal fibronectin test prior to performing digital examination. It is only valid if a patient has not had a digital exam, intercourse, vaginal bleeding, or a vaginal ultrasound for 24 hours. Only send the fFN if it will affect treatment decisions (i.e. no benefit if delivery is imminent or contractions stop spontaneously with observation). Residents should discuss with MCH attending whether to send the fFN due to the high expense of the test. However, it should be collected at time of initial exam and held until a decision is made on whether to send it.

C. **<u>If PTL, POOC, or PROM is diagnosed:</u>**

The MCH fellow should be consulted for everyone in preterm labor < 34 weeks for management including tocolysis and they should be present at all preterm births.

MFM and/ or OB should be consulted by MCH attending for preterm labor < 32 weeks or < 34 weeks pending the clinical situation.

1. Determine gestational age. If uncertain/no prior US, amniocentesis may need to be done to assess fetal lung maturity to determine management.
2. Administer corticosteroids. See <u>ANCS SOP</u>.
    a. Betamethasone 12 mg IM q 24 hours x 2
3. Administer antibiotics per GBS guidelines.
4. Evaluate for contraindications to tocolytics. These may include:
    a. Ruptured membranes
    b. Intrauterine infection
    c. Preeclampsia with severe features
    d. Abruption
    e. Fetal anomalies or demise
    f. Imminent delivery (>6 cm dilatation: relative contraindication)
    g. Severe FGR
    h. Hemorrhage with hemodynamic instability
5. If there are no contraindications, start tocolysis. At UNM, Nifedipine **is the first-choice agent**

A. Nifedipine
    i. Start with 20 mg po and give an additional 10 mg po q one hour up to a total of 30 mg loading dose if systolic blood pressure remains above 90 and there is no evidence of uteroplacental insufficiency on continuous monitoring.
    ii. Continue 20 mg po q4-6 hrs until steroids complete (24 hours after last dose or may stop 12 hours after last dose per consultant guidance).
    iii. May continue nifedipine until 36 weeks in selected patients - e.g. recurrent preterm labor after stopping nifedipine or for preterm labor stopped with dilation at early gestational age.

B. Indomethacin* -

i. 50 mg po then 25-50 mg q 6 for a maximum of 48 hours. Need to confirm adequate amniotic fluid prior to use and monitor fluid after use.

ii. 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 FMOB or MFM.

6. Start magnesium sulfate $MgSO_4$ for neuroprotection if < 32 weeks and at risk for delivery in the next 24 hours with dilation > 3 cm, PPROM, or planned preterm delivery. See Neuroprotection SOP.
   a. Given 4 g bolus IV over 30 minutes followed up 1 g/hr for up to 24 hours. Should be discontinued at 24 hours.
   b. Magnesium is contraindicated in myasthenia gravis or cardiac disease. Caution in renal insufficiency.

D. **Preterm Onset of Contractions (POOC) not in labor**
   1. Most patients with POOC do not need tocolysis. 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.
   2. Occasionally nifedipine may be used as an outpatient for symptomatic treatment of POOC. Nifedipine 10 mg PO tid prn can be prescribed, up to 10 tabs for comfort.
   3. Rarely terbutaline (contraindicated in cardiac disease, uncontrolled DM or uncontrolled hyperthyroidism) can be given as a one-time dose to see if contractions stop. There are risks to terbutaline. Dose: 0.25mg sq q 30min. Discuss with MCH Fellow or FMOB or OB/GYN attending if considering use of terbutaline for this indication.

E. **If PTL is resolved with or without tocolysis, follow-up after hospitalization may include:**
   1. Cervical length ultrasound or fFN to assess likelihood of preterm delivery.
   2. Frequent (weekly) cervix exams preferably by the same examiner.
   3. Modified bed rest, pelvic rest.
   4. Patient education regarding symptoms and signs of when to come to the hospital.

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**********DO NOT USE WITHOUT FMOB, OB/GYN or MFM CONSULTATION**********

SOP DIAGNOSIS AND MANAGEMENT OF PRETERM LABOR

SCOPE/APPLICABILITY:
The goal of this SOP is to standardize the definition, evaluation, and management of Preterm labor at UNM by applying national recommendations from several societies. This SOP should be applied to patients showing up to OB Triage/ admitted to Labor and Delivery with signs suggestive of possible preterm labor between 23 weeks and 36 weeks and 6 days.

PURPOSE:
In the US, about 12% of all deliveries occur preterm, with 50% of these being due to Preterm labor. Even after these odds, about 70% of neonatal deaths are from pregnancies complicated by preterm delivery. Preterm birth is defined as a delivery that occurs from 20 weeks up to 36 weeks and 6 days of gestation.

Preterm births might be spontaneous or indicated, which is an important distinction. Indicated preterm deliveries have a medical or fetal reason to be delivered and there are guidelines in terms of which pregnancies would require this. In the case of spontaneous preterm deliveries, there are known risk factors, and there are protocols on how to manage these patients, but they are not always effective, and the cause of the preterm delivery is not always clear. This SOP only focuses on management of spontaneous preterm labor, its definition, diagnosis and management.

Risk stratification of patients with contractions is important in defining the right course of action. Therefore, the use of cervical dilation and cervical length is important in determining which patients are at high risk of preterm delivery in the next week and treating those accordingly. Cervical dilation change has been the most used method of identifying those at risk of preterm delivery and the most commonly used definition in determining preterm labor.

Cervical length can be used to predict the risk of preterm delivery within a week and is used as an adjunct to the determination of which patients need treatment for preterm labor and which do not in the setting of contractions without noticeable cervical dilation or change in dilation. In a patient with cervical length >30mm, the risk of preterm delivery within the next week is <2% and <5% of delivering preterm at all irrespective of fetal fibronectin (fFN) with >95% chance of delivery >35 weeks of gestation. However, those who have a cervical length <20 mm are associated with a high risk of delivery within 1 week as >25%, with this level of cervical shortening, fFN results do not impact the risks. For those who have cervical measurement between 20-29mm, the risk of PTD within 1 week is less than 5% when combined with a negative fFN. The combination of CL measurement with fFN when the patient meets certain criteria, in the absence of cervical change, might reduce the need for admission for some patients leading to a reduction in costs for the health care system without compromising patient care.

Cervical Length	Chance of PTD within 1 week

>3cm	<2%
2cm-2.9cm w neg fFN	<5%
<2cm	>25%

Protocol A: Ultrasound evaluation of Preterm Labor (preferred method, when available resources permit)

If <3cm dilated or no cervical change:

- Perform transvaginal cervical length (if under 34 weeks)
    - If cervical length <20mm, see below and treat as if Preterm labor
    - If cervical length between 20-29mm
        - fFN should be sent for analysis
            - if positive, treat as preterm labor
            - if negative, most likely no preterm labor
                - if contractions persist, continue to observe, consider repeating CL in several hours if no cervical change
                - if contractions subside, then OK to discharge home with precautions
    - If cervical length >30mm
        - Discharge home with diagnosis of Preterm contractions, orient of precautions and reasons for returning to OB-Triage

Protocol B: Physical exam diagnosis of Preterm Labor

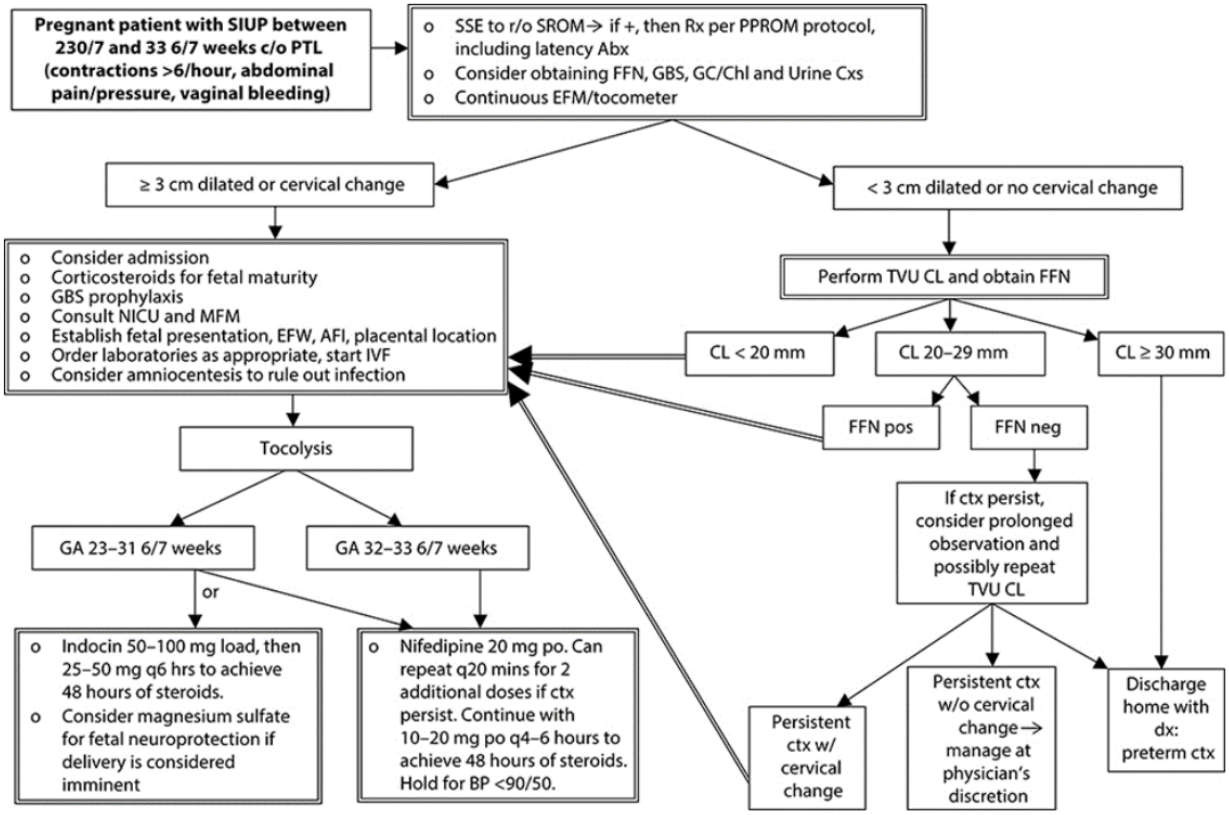
If ≥3 cm cervical dilation or cervical change:

- Patient should be admitted for preterm labor
- Corticosteroids for fetal lung maturation should be administered in most cases:
    - Corticosteroids administration courses:
        - Betamethasone 12 mg IM every 24 hrs x 2 doses
        - Dexamethasone 6 mg IM every 12 hrs x4 doses
    - Consider rescue course of corticosteroids for those <34 wks and who previous course of steroids was >1-2 weeks prior
    - Late preterm steroids should not be administered in pre-gestational diabetes
    - Corticosteroids should not be administered to those who previously received a course of steroids and are currently between 34-36w 6d
- GBS prophylaxis should be started if patient over 3-4 cm and:
    - GBS status unknown or positive in the setting of preterm labor; or
    - Urine culture in pregnancy previously performed is positive for GBS
- NICU should be notified of a patient's arrival and consultation provided at a convenient time or sooner if delivery appears to be imminent.
- MFM service should be consulted in the morning or during the night if additional recommendations are needed due to certain conditions or circumstances.

- Fetal presentation, placental location and Estimated fetal weight should be established, if not done so in the past 1-2 weeks for accurate outcomes evaluation and further NICU and MFM assessment.

- Order labs:
    - CBC, T&S, HIV if not done
    - Consider Urine drug screen, other appropriate labs
- Tocolysis should be administered if under 34 weeks' gestation
    - 23w 0d- 31w 6d
        - Nifedipine 20 mg PO immediate release tabs loading, followed by 10-20 mg orally q 4-6 hrs for 48hrs
        - Consider holding nifedipine if BP's <90/50
        - Second choice if hypotensive or nifedipine does not decrease uterine activity: indomethacin PO 50-100 mg loading followed by 25-50 mg every 6 hrs to be continued for 48hrs. Although the literature is somewhat controversial, indomethacin has been associated with numerous adverse neonatal outcomes when used for tocolysis so the risk to benefit ratio generally favors nifedipine.
        - Magnesium sulfate for fetal neuroprotection (see Magnesium sulfate protocol). Magnesium is not an effective tocolytic. Although there are theoretical concerns about its use in combination with a calcium antagonist, this does not appear to be a significant clinical consideration in the absence of other contraindications for the use of either drug.
    - 32w 0d - 33w 6d
        - Nifedipine 20 mg immediate release tabs loading, followed by 10-20 mg orally q 4-6 hrs for 48hrs
        - Consider holding nifedipine if BP <90/50
        - These patients do not need magnesium sulfate
    - >34w 0d
        - No tocolysis or magnesium sulfate is indicated
        - Only Corticosteroids should be administered

Management Diagram:



Note: Do not recommend Indocin as first line at any gestational age so ignore that part of the box above.

XXII. ANTENATAL CORTICOSTEROIDS FOR LATE PRETERM DELIVERY

A. Antenatal corticosteroids should be considered for those at risk for late preterm delivery. The MFM SOP is pasted below, but complete information on ANCS is available on the website in the SOP.

   a. A single course (2 doses 24 hours apart) of betamethasone IS RECOMMENDED for pregnant patients at high risk of late preterm birth within 7 days, between 34 0/7 weeks and 36 6/7 weeks of gestation **who have not received a prior course of antenatal corticosteroids.**
   b. DO NOT GIVE to patients diagnosed with chorioamnionitis.
   c. DO NOT delay delivery in order to complete a course of steroids.
   d. An indicated late preterm delivery (such as preeclampsia with severe features) should NOT be delayed for corticosteroid administration.
   e. Groups not studied by the Antenatal Late Preterm Steroids trial include:
      a. Multiple gestations
      b. Pregestational diabetes (**DO NOT GIVE without consultation with MFM**)

c. Those who gave birth by cesarean at term
d. Those who had a previous course of corticosteroids

f. The MFMU study showed that the administration of betamethasone led to a significant decrease in the need for respiratory support, with an even larger decrease in severe respiratory complications. There were also significant decreases in the rates of transient tachypnea of the newborn, bronchopulmonary dysplasia, the need for postnatal surfactant, and RDS. Exposed infants were less likely to need postnatal resuscitation.

g. Hypoglycemia was more common in infants exposed to betamethasone, (24% vs, 24.9%), with no reported adverse events or prolongation of length of stay. The American Academy of Pediatrics recommends the monitoring of neonatal blood sugars for late preterm infants because late preterm birth is a known risk factor for hypoglycemia.

XXIII. PRETERM PREMATURE RUPTURE OF MEMBRANES (PPROM)

Definition: Spontaneous rupture of membranes at less than 37 weeks prior to onset of contractions. See SOP for detailed management.

A. If < 34 weeks' gestation: give antenatal corticosteroids and begin antibiotics for PPROM
UNM Regimens:
1. Azithromycin 1g PO once and ampicillin 2g IV q6h for 48 hours followed by amoxicillin 500mg PO q8h for 5 days.
2. Ampicillin 2g IV q6h and erythromycin 250 mg IV q6h followed by amoxicillin 250 mg PO q8hr and erythromycin 333 mg PO q8hr for 5 days.

Recommendation is hospitalization until delivery at 34 weeks or later if expectantly managed beyond 34 weeks.
Delivery is recommended if onset of labor, NRFS, chorioamnionitis, or concerning maternal status.

B. If ≥ 34 to <37 weeks' gestation: offer late preterm steroids and treat for specific infection with antibiotics that target those infections. (e.g. BV, UTI, Chlamydia).
1. Consider expectant management with decreased risk of neonatal infection, Triple I, endometritis with delivery at 34 weeks versus increased risk of neonatal distress and c-section.
2. Contraindications to expectant management are evidence of infection or concern for fetal acidemia based on fetal surveillance. . Relative contraindication is malpresentation or advanced dilation at risk for cord prolapse.

XXIV. PREMATURE RUPTURE OF MEMBRANES (PROM) AT TERM

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

B. Initial evaluation with term PROM
   1. Sterile speculum exam:
      - Insert sterile speculum with water for lubrication, avoid lubricating jelly to prevent a false positive
      - Observe pooling or fluid coming from the cervical os. If none is seen, have the patient bare down or cough or lie flat for 45 minutes and repeat the exam later. If pooling is seen, check for meconium.
      - Ferning: Collect samples of fluid from the pool in posterior fornix and allow the slide to dry for 10 minutes to observe for ferning. Be careful to avoid cervical mucus when taking a sample, which can also cause a false-positive ferning that appears different from amniotic fluid.
      - Check Nitrazine. Turns blue (pH of 6.0) with amniotic fluid. A false positive can be caused by urine, blood, semen, BV, Trichomonas.
      - At UNM we have started using ROM Plus. ROM Plus, rupture of membranes test, detects Alpha-Fetoprotein (AFP) and Insulin-like growth factor binding protein-1 using a monoclonal/polyclonal antibody. The test is non-invasive and is done with a vaginal swab. The swab is placed in the vagina 5-7 cm for 15 seconds. The swab is then mixed and applied to a test strip. The false positive rate is approximately 9%, false negative rate is 0.5%, sensitivity is 99% and specificity is 91%. The ROM Plus may be useful in patients with equivocal cases of membrane rupture and is currently being used in UNM OB triage.
      - Here is a link to the SOP: https://UNMH.policymedical.net/policymed/anonymous/docViewer?stoken=9d908eb3-db2a-424b-8c92-349690a4159d&dtoken=b21da949-f05e-4d93-8bf2-f6a73f519bef
      - ROM Plus: Accurate Care.
      - If discharge is seen, also perform a wet mount.
      - Visual inspection of cervix for estimate of dilatation, effacement, presentation.
      - Inspection of the vulva for herpetic lesions.
   2. Avoid digital exams unless in active labor and minimize the number of digital exams during labor.
   3. Obtain NST to confirm fetal well-being.
   4. Leopold's and/or ultrasound to confirm vertex presentation.
   5. If you have an equivocal exam, check MVP.

C. Disposition

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

D. Guidelines for expectant management

1. **Digital cervical exams are not recommended until active labor** (regular and strong contractions).
2. May continue expectant management up to 12 hours if the patient declines induction at admission. Prolonged expectant management is medically reasonable (e.g. 24 hours) but is generally neither preferred by patients 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. If evidence of fever and/or fetal tachycardia, begin antibiotics and initiate induction. Criteria for expectant management include:
    A. GBS negative
    B. Reactive NST
    C. Vertex presentation
    D. Normal vital signs
    E. No clinical signs of intraamniotic infection
    F. Have reliable transport to return to the hospital if bleeding, contractions, fever, decreased fetal movement
3. GBS – treat according to GBS culture (should have been done). Do not treat if culture is negative even if ruptured > 18 hours. If GBS status is unknown, obtain rapid GBS if at least 37 weeks.
4. If temp > 38.0C antibiotics are recommended for chorioamnionitis including gram-negative coverage. If history of Group B strep bacteriuria during pregnancy, history of prior infants with symptomatic GBS, or EGA <37 weeks, begin antibiotic therapy at presentation (see GBS guidelines).

E. Induction: Expectant management vs. active management (oxytocin 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. Allow at least 18 hours of oxytocin before diagnosing an unsuccessful induction if patient and fetal well-being allow. Some evidence shows a decreased risk of chorioamnionitis for oxytocin versus misoprostol. Oral misoprostol may also be used per Misoprostol SOP .

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

a. Beginning at 41 weeks' gestation - due to increased risk of stillbirth , antenatal testing is recommended. Remind the patient to monitor for fetal movement(if feels like less fetal movement then count and normal is six to ten kicks in two hours).

b. Encourage induction if bishop's score 8 or greater at 41 weeks. All patients reaching 41 weeks should be offered a cervical exam as part of late-term 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 is recommended in almost all cases.

d. Recommend delivery if oligohydramnios (MVP < 2).

e. Encourage performing stripping of membranes at 39 weeks' gestation or later. A cervical exam at this time will help with late-term planning.

f. Late-term induction prior to 41 weeks (e.g. 40 2/7) is not usually recommended. Although the ARRIVE Trial published in 2018 suggests that elective induction of low risk patients at 39 weeks does not increase the cesarean delivery rate, UNM does not routinely offer this and an MCH attending should be consulted for any elective induction.

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XXVI. INTRAUTERINE FETAL DEMISE

Please consult MCH fellow. Information on management available is on the OB Pregnancy Loss SOP on the OB/GYN L&D Wiki page including paperwork and ordering genetic testing.

XXVII. OB TRIAGE

For all patients seen in OB Triage, start an **OB Triage tests and treatment Provider Order** set. This will require the start of the Medical Screening Exam (MSE).

If the patient is not admitted, please place a discharge order before sending the patient home. This will make you complete the MSE. Please select AMA if a patient leaves AMA or left without being seen if they left prior to them being roomed and you evaluating them.

There is an OB Triage CNM most weekdays who sees and manages most OB Triage patients. CNM is in OB Triage to improve flow and is capable of managing most patients. When MCH is not busy the MCH Service should see MCH patients and offer to help with OB and CNM patients as needed. See below workflow and general guidelines.

OB Triage Workflow under OBT CNM Management

This workflow is an evolving process and may change.

1. Patient checks in at the front desk and is registered by the front desk person.
2. RN triages patients using AWHONN Maternal Fetal Triage Index (MFTI) and initiates MSE. RN will consult with OBT CNM if they have any questions re patient status.
3. Patient is roomed according to MFTI and room availability.
4. OBT CNM evaluates patient acuity (may be consulted with RN only) and determines appropriate action based on established CNM Clinical Practice Guidelines.
    a. OBT CNM will then delegate patients to OBT CNM, learners and/or appropriate services, unless a specific request for a provider or service has been made from a referral source.
    b. OBT HUC or RN will page other providers as directed by OBT CNM.
5. Methods for patient care by OBT CNM:
    a. OBT CNM may assume complete care of patients if no learners are present or to expedite patient care.
    b. OBT CNM completes MSE determination.
    c. For learners working with OBT CNM:
        i. OBT CNM and/or learner takes history. Learner and OBT CNM complete physical exam, assessment, and plan.
        ii. If physician consultation is necessary, learner and/or OBT CNM consult.
        iii. Patients discharged or admitted based on OBT CNM evaluation.
        iv. OBT CNM may complete any aspect of patient care alone, even when working with learners, per OBT CNM discretion.
6. Delegation of patient care in OB Triage
    a. OBT CNM may care for the following patients in OB Triage:
        i. Low and moderate risk patients per established CNM Clinical Practice Guidelines
        ii. High risk patients for common low risk issues per OBT CNM discretion (i.e., term labor checks, term rule out SROM, 1st trimester nausea and vomiting, etc.)
        iii. Any patients who need timely evaluation per OBT CNM discretion
    b. Patients with the following diagnoses or conditions may be referred to OB/GYN or MCH services for evaluation and management, and they will complete MSE. CNM may also ask for consultation regarding care of these or other complex patients.
        i. Pregnancy of unknown location/ possible ectopic pregnancy: OB or MCH
        ii. Multiple severe range blood pressures (greater than or equal to 160/110): OB/GYN or MCH
        iii. Substance use treatment:
            a. Established with Milagro: MCH
            b. New Subutex start or established with Milagro: MCH
            c. New methadone start not established with Milagro: OB/GYN

iv. Post-operative complications, including abnormal wound checks: surgical service or OB/GYN if surgery performed outside of the UNM system.
v. MCH continuity patients: If MCH continuity provider wishes to care for MCH patients in OB Triage, they should communicate this to OB Triage CNM and OB Triage RN.
vi. OB Triage CNM may care for MCH patients to expedite care and may supervise MCH learners as Attending providers. MCH service residents and /or MCH Attending should communicate about capability to see MCH patients in OB Triage at the start of CNM Triage shift to set expectations.
vii. Transports or patients sent from ultrasound or clinic intended for physician care. Referring providers will communicate with physicians and RNs. RNs will notify OBT CNM that the patient will have physician care.
viii. Any other condition/diagnosis outside usual CNM care per established CNM Clinical Practice Guidelines or at OBT CNM discretion per patient census or acuity: OB/GYN or MCH.

7. Methods to expedite care in OB Triage: If at any time the OBT CNM determines that they need help to expedite patient care, they will call on the OB/GYN, MCH, or CNM services to provide back-up OBT care ("back-up provider"). The expectation is that the back-up provider will respond appropriately to expedite high quality and timely patient care.
8. Admitting patients: For patients who are admitted for any reason, OBT CNM and/or learner will document HPI and initial exam in an OB Triage Note. Admitting service (CNM, OB/GYN, or FCM/MCH) will complete H&P for any patient who is admitted as an inpatient or for observation.
9. All OBT staff and providers may consider coordination with RN supervisor and/or OBT CNM, L&D CNM, or OB/GYN attending or MCH attending about any problems in communication that need assistance with resolution. If the problem cannot be resolved, refer to *Algorithm to Enhance Culture of Safety in Obstetrical Care.*

OB STAT Rapid Response Team Emergency Paging
L&D Algorithm to Enhance Culture of Safety

CNM 2020 Clinical Practice Guidelines

A. Consultation or collaboration and documented plan of care may be indicated in patients with the following:

Acute abdominal pain – when anything other than common discomforts is suspected
Asthma exacerbation

Fever
Headache unresponsive to usual treatment
Hypertensive disorders of pregnancy <36 weeks
Malpresentation at term
Non-reactive NST/FHR Category II or oligohydramnios, if not admitting
Persistent hyperemesis
Suspected DVT
Suspected PTL < 35.0 weeks
Suspected SAB
Trauma (physical)
CNM discretion

B. PRIMARY REFERRAL/MANAGEMENT: The following ***may be jointly managed with a physician (collaboration) in individual cases*** when deemed appropriate by specialist and CNM.

Abdominal trauma
Active vaginal bleeding after 1st trimester
Acute chest pain—when cardiac etiology is suspected
Acute intoxication
Acute new onset medical diagnosis
Acute respiratory distress or shortness of breath
Diagnosed PTL < 35.0 weeks
FHR Cat III tracing without response to extrauterine resuscitation
IUFD
Malpresentation in labor
Preeclampsia with severe features/HELLP
Psychiatric emergency
Pyelonephritis
SAB
Suspected ectopic
CNM discretion

*A CNM may evaluate and treat any patient in OBT if necessary.

XXVIII. THERAPEUTIC REST

Background:
Patients sometimes experience frequent, painful contractions with slow (or no) cervical change. These patients may benefit from pharmacological interventions to help provide physical and emotional rest. This guideline is based on methods used anecdotally and in limited research.

Patient inclusion criteria:
-Term (37w0d to 41w6d)
-Patients should not have any contraindications to administration of the medications used for therapeutic rest (medication allergy, FGR with abnormal Dopplers)
-All patients should have a reactive NST before administration of therapeutic rest.
-Patients should have someone available to drive for them.

Therapeutic rest regimens:
Morphine Sulfate: administer 12-15 mg IM Morphine Sulfate
Morphine Sulfate may be given with ONE of the following medications:

1. Promethazine
   Administer 25 mg PO Promethazine
   The patient may also be given a prescription for 12.5mg PO Promethazine to take q6hrs at home for rest or nausea.

   OR

2. Hydroxyzine
   Administer 100mg of PO Hydroxyzine
   The patient may also be given a prescription for 50 mg PO Hydroxyzine to take q6hrs at home for rest and anxiety.

   OR

3. Diphenhydramine
   Administer 50 mg PO Diphenhydramine
   The patient may also be given a prescription for 50mg PO Diphenhydramine to take q6hrs at home for rest.

Patients may be discharged home after medication administration. No additional fetal monitoring is recommended.

References:

- Satin, A. Latent Phase of Labor. http://www.uptodate.com, June 18, 2019
- Dhanya Mackeen, A., Fehnel, E., Berghella, V. and Klein, T. Morphine Sleep in Pregnancy. American Journal of Perinatology 2014; 31:85-90.
- Greulich, B. and Tarrant, B. The Latent Phase of Labor: Diagnosis and Management. Journal of Midwifery & Women's Health 2007;52:190-198.

XXIX. LABOR INDUCTION AND AUGMENTATION AND LABOR PROGRESS

Labor induction lengthens the total time of labor and affects a patient'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, ACOG, 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 prior to 39 weeks are not appropriate.
2. Labor induction should not occur without a medical indication in patients between 39 0/6 and 40 6/7 weeks who have an unripe cervix (Bishop score< 8) without discussion with MCH faculty.

Encourage induction if Bishop's score of 8 or greater at 41 weeks.See Section on LATE-TERM PREGNANCY

A. 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 following induction guidelines have been developed to facilitate a consistency in approach and to minimize the morbidity inherent in failed labor inductions and prolonged labor.

3. Patients who are being admitted for induction and have an Bishop's < 8 will likely benefit from cervical ripening, which will shorten the total time of labor. Cervical ripeness can be defined as a Bishop score of 8 or greater, 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 patients with cervical dilation of 2 cm or less is reasonable.
4. Patients 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 as it creates an unacceptably high risk of uterine rupture based on observational studies.
5. A contraction stress test (CST) can be used to determine how well a fetus will tolerate contractions. It is done by titrating low dose pitocin to achieve three contractions in ten minutes. Consider performing a CST prior to misoprostol for those who have FGR that is severe or with 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 FMOB, MCH Fellow, MFM, or OB/GYN faculty may be helpful.

6. The medical (misoprostol) and mechanical (Cook or foley catheters) methods may be complementary in 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 induce with oxytocin. One preferred option is to start with two or three oral or 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 the patient is in labor and does not require additional pharmacological induction. A Cook catheter and misoprostol can also be used simultaneously.
7. Misoprostol and a foley/Cook should be separated by 2 hours per UNM Protocol. For example – when a Cook is placed, start misoprostol 2 hours later. If started with misoprostol, may place a Cook 2 hours after the misoprostol. It is acceptable to continue the misoprostol every 2-4 hours while the Cook is in place, depending on which route and dose you are using. See the Miso SOP for dosing instructions.

   UNM SOP for Misoprostol for Cervical Ripening is summarized below.

   a. 25 micrograms PO every 2 hours or
   b. 50 micrograms PO every 4 hours or
   c. 25 micrograms Per Vagina every 4 hours. May increase to 50 mcg after two 25 mcg doses.
   d. Consider re-dosing per above dosing schedule if contractions are >4 minutes apart, and fetal status is reassuring (Category I
   e. Recommended maximum dose is 300 mcg regardless of route of administration but may consult if maximum is reached and additional doses desired.
8. 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. At UNM, it is recommended that those with a history of a prior cesarean should be on a “low-dose oxytocin” protocol. Most other patients should be on the “normal oxytocin” protocol.

9. On occasion, oxytocin will need to be reduced due to tachysystole (contractions closer than q 2 minutes) or due to non-reassuring 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.
10. Labor induction can take a long time prior to active labor. Recent ACOG/MFM guidelines recommend reserving the diagnosis of unsuccessful induction for those without cervical change after at least 24 hours of oxytocin administration without artificial membrane rupture (if AROM is not feasible) after completion of cervical ripening. If AROM is possible, unsuccessful induction should not be determined unless oxytocin has been administered for at least 12-18 hours after membrane rupture. Up to 24 hours of rupture and oxytocin is preferable if permissible. Implicit in these guidelines is a willingness to proceed with amniotomy and commit the induction until delivery.
11. If a patient with intact membranes does not progress to active labor, it may be reasonable to stop the induction and wait a few days before trying again. This would not be appropriate for preeclampsia or FGR, but may be a reasonable option in gestational hypertension at 37 weeks, gestational diabetes at 38-39 weeks, or perhaps late-term at 41 1/7.
12. Labor augmentation. Oxytocin augmentation should be initiated when a patient in labor does not progress for 2-4 hours and contractions are felt not to be adequate. If the patient is under 6 cm dilation, an alternative is to reevaluate and if not in active labor, discharge the patient home to await spontaneous labor, if patient and passenger are otherwise well. Standards of active-phase progress should not be applied to those < 6 cm dilated. Oxytocin titration is similar in labor augmentation and induction and a slow oxytocin protocol is indicated in those with prior cesarean who are attempting TOLAC.
13. Operative obstetrical providers (at UNM: FMOB or OB/GYN) should be consulted for prolonged labor or unsuccessful induction. Prolonged labor induction and/or augmentation present several potential fetal and maternal risks including development of chorioamnionitis, increased incidence of postpartum hemorrhage, uterine rupture (particularly in the patient with a scarred uterus), and difficult cesarean delivery after a prolonged second stage labor. The MCH Fellow should be consulted early enough to be present in the hospital when the following scenarios occur:
    a. **Labor induction with oxytocin and AROM has occurred for 18 hours and the patient is not in active labor.** The 18 hrs does not include any time period of cervical ripening. Recommend low threshold to consult

MCH fellow if difficulty with AROM in setting of prolonged labor or induction.

b. **Arrest of active labor (≥6 cm) for 4 hours without cervical change**
c. Second stage labor with active pushing > 3 hours without imminent delivery.
d. 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 with poor progress. If concerns for malposition it is recommended to check with an ultrasound for head position at one hour of pushing for a nulliparous or thirty minutes for a multiparous patient to prevent the fetal head from being wedged in a malposition.

14. The Management of Labor Progress SOP has a flowchart that can be used to assess labor progress.

Induction Tips from Larry

1. **Cook catheter or foley Catheter with misoprostol appears to be optimal ripening**
   a. Softer and more effaced than with catheter alone
   b. Use 50 mcg oral miso q 4 hrs at least 2 hrs after Cook placed or may add Cook 2 hrs after miso
   c. If cervix very posterior use speculum and ring forceps to place
   d. Check that the uterine balloon remains inside the cervix before blowing up the vaginal balloon.
   e. After a Cook, the cervix seems to respond to oxytocin or labor based on effacement rather than the dilation
   f. If using a Foley we have 75 mL balloons that can be inflated with 60 mL.
   g. Consider reassessing the Cook catheter at 6 hours by deflating the vaginal balloon, it can be kept in for 12 hours but 12 hours is not a magical hour. If it's 3 am leave Cook in till 6 or 7 am. May leave up to 18 hours.
   h. In primps, deferring oxytocin until the cervix ripe is usually preferred if you can give additional ripening agent.
2. **SROM no labor**
   a. Do NOT check cervix if SROM and not having regular contractions
   b. Recommendations are to induce or augment if SROM no labor but may be reasonable to wait up to 12 hours per patient request
   c. If primip (or perhaps multip) with closed appearing cervix on spec exam consider using misoprostol 50 mcg oral q 4 hrs. No need to check until having strong regular contractions
   d. Current recommendation is to induce labor if at least 34 weeks with SROM, but a recent RCT (PPROMT trial) supports considering expectant management at 34-36 weeks. Admit to L and D for at least 12-hour observation. The expected management option requires well documented counseling and should be done in consultation with MCH Fellows and/or FMOB.

3. **Misoprostol for ripening**
    - **a.** Vaginal remains usual route
    - **b.** Common for contractions to continue for more than 4 hrs and if cervix unripe may be better to wait till 6 hrs to start oxytocin
    - c. Consider increasing to 50 mcg vaginal for 3rd dose without progress or significant contraction pattern after three 25 mcg doses.
    - d. CST recommended if FGR with abnormal Doppler's or concern about fetal tracing.

4. **What good are IUPCs?**
    - a. No proven value and increase risk of chorio
    - b. May be needed if lack of progress and contractions are q2-3 minutes for >2 hrs
    - c. May be needed if nurses reluctant to increase oxytocin due to frequency of contractions
    - d. Amnioinfusion
5. **Keep induction moving along: If you come to a fork in the road, take it (from Yogi Berra)**
    - a. Oxytocin should be increased at appropriate interval until cont q 2-3 minutes
    - b. If not increasing due to concern about fetal monitoring that is indication for attending to review monitoring
    - c. If not progressing despite regular contractions, consider AROM
    - d. Can reconsider if induction truly needed BEFORE AROM
6. **Fine to induce TOLACs but some caution**
    - **a.** Assure TOLAC candidate
    - b. Re-counsel/reconsent about higher risk of rupture: Increases from 0.5% to about 1%) and 30% lower likelihood of success
    - c. Make sure they are in it for appropriate time frame- unfortunate when patient bails after 18 hrs when progressing and has ROM
    - d. FMOB should be consulted for all TOLAC inductions.
7. **Induction and preeclampsia with severe features**
    - a. Goal is delivery within 24 hrs
    - b. Appropriate to be more aggressive
    - c. Earlier AROM /IUPC if needed

XXX. CERVICAL RIPENING WITH A HOME CATHETER

Those meeting inclusion criteria can be offered cervical ripening with a balloon catheter at home. Cervical ripening at home is relatively rare and this process is still being worked out for patients on MCH, but consult FMOB or MCH fellow for direction if there is a patient that may benefit.

See the SOP for inclusion criteria.

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XXXI. EMERGENT CESAREAN DELIVERY ON THE MCH SERVICE

If emergency cesarean section delivery is recommended on the MCH service with no FMOB present in the hospital, the 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 (in SBAR format) to the OB/GYN team. If the FMOB or MCH Fellow is there or arriving, it is important that the MCH resident stay in the OR to help until the surgical team has started and states they no longer need assistance.

XXXII. POSTPARTUM HEMORRHAGE CARE

The MCH attending should be notified immediately of **any** postpartum hemorrhage that is ≥1000cc. If emergency treatment is needed and FMOB and MCH Fellow are not immediately available, OB/GYN should be notified, and the patient should be moved to the OR or PACU per charge nurse direction.

Please see the UNM Obstetric Hemorrhage SOP for risk assessment and management. If a patient is at very high risk of hemorrhage and/or is anemic, the MCH fellow and FMOB or OB/GYN attending should be present at the birth.

Postpartum hemorrhage care should be algorithmic using guidelines (e.g. ALSO Postpartum Hemorrhage Algorithm).

XXXIII. SEXUALLY TRANSMITTED INFECTION (STI) IN PREGNANCY

A. General

1. All prenatal patients are recommended to be screened for STIs at the first prenatal visit (Chlamydia, GC, TPAB and/or RPR, HBsAg, HIV).
2. Any patient at high risk for STIs (illicit drug use, prior STI during pregnancy, multiple sex partners, HIV-infected partner) should be re-screened in the third trimester. Offer rescreening in the third trimester in all teen patients as well.
3. Any patient with no prenatal care presenting in labor should be screened if possible, at delivery. At UNM, rapid HIV testing is available.
4. Any patient who delivers a stillborn infant should be (re) tested for syphilis.
5. Per the NM Department of Health (NM DOH), as of 2023 it is recommended to screen for syphilis usually TPAB followed by RPR if positive in the first trimester, at 28-32 weeks, and at time of delivery.

6. A test for hepatitis C antibodies (anti-HCV) should be performed at the first prenatal visit for pregnant patients at high risk for exposure. Those 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 load).

7. **Treat partners using expedited partner therapy!** For information on expedited partner treatment, STI reporting, or requesting records or discussing syphilis cases, contact the NM DOH. https://nmhealth.org/about/phd/idb/std/

B. Chlamydia Cervicitis

1. Recommended:

Azithromycin 1 g po once. While azithromycin is recommended for pregnancy treatment, doxycycline 100mg po bid x 7 days is recommended outside of pregnancy and for expedited partner therapy.

Retest the patient four weeks after completion of therapy to test for re-infection, as azithromycin is effective for treatment. Treat partners and discuss HIV and other STI testing. Testing for chlamydia and GC should be repeated in the third trimester, and other STI retesting (RPR, HIV, HBsAg) considered at that time.

2. If a patient is untested at birth, monitor infants for signs of infection. If a neonate develops pneumonia, they should receive coverage for CT.

C. Gonorrhea

1. Ceftriaxone 500 mg IM once **AND** Azithromycin 1 g po once
2. Treat partners and discuss HIV and other STI testing**.**
3. Testing for chlamydia and GC should be repeated in the third trimester, and other STI retesting (RPR, HIV, hepatitis) considered at that time.
4. Neonates of untreated patients are at high risk for infection. Infants require testing and treatment after birth. Contact Peds ID for management recommendations.

D. Vaginal Trichomoniasis

1. Metronidazole 500 mg po bid x 7 days is preferred treatment in pregnancy, but 2 gm po x one is an option for those unable to tolerate the 7 day regimen.
2. A test of cure is recommended within three months of treatment and can be done with nucleic acid amplification as early as two weeks after treatment.
3. Treat partners and discuss HIV and other STI testing.
4. Consider rescreening for STIs third trimester.

E. Vaginal Candidiasis

1. Miconazole or clotrimazole one application vaginally QHS x seven days is the preferred regimen in most cases.
2. It is not necessary to treat asymptomatic infections or partners.
3. FDA advises caution with using oral fluconazole due to concern for possible increased risk of SAB in Danish study taken between 7-22 weeks of pregnancy although a more recent study does not show this increase.

F. Bacterial Vaginosis

1. Recommended: Metronidazole 250 mg po tid x 7 days.**

Alternative: Metronidazole 500 mg po bid x 7 days, 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.*

2. Only those who are at high risk of preterm labor (previous preterm delivery, current preterm labor, multiple gestation) should be screened for BV, since studies have shown that treating BV lowers the risk of PTL only in those at high risk for preterm labor. High-risk patients 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 or may be made with a vaginal DNA swab.
4. Treatment of sexual partners is not indicated.

G. Syphilis

1. Please see the Syphilis SOP from ID for complete information on syphilis.
2. Contact MCH fellow or FMOB to add the patient to co-follow.
3. Treatment of syphilis in pregnancy is complicated and consultation is encouraged.
4. Recommended treatment is the same for all adult patients.
5. 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 the possibility of neurosyphilis, which requires 10 to 14 days of IV therapy.
6. Those with a PCN allergy will require admission to the MICU for desensitization. The MICU has a standardized protocol for desensitization and treatment. If they have late syphilis, they will require admission q week for desensitization for each dose.
7. Neonates will require evaluation after birth. Depending on when pregnancy was treated and response, infants may require no treatment, a single IM dose, or a complete evaluation including an LP and 10-14 days of PCN. **Consult Peds ID after birth for any neonate born with exposure to syphilis.**
8. No need to re-treat in future pregnancies unless clinical or serologic evidence of reinfection.
9. Records should be obtained from the state health department to confirm prior treatment when a positive test result is first obtained.
10. Partners should be seen, examined and treated for appropriate stages of disease if indicated.
11. Recommend HIV testing and other STI testing.

H. Genital herpes

1. CDC Gerpes-Genital(HSV) In Pregnancy. https://www.cdc.gov/stiapp/herpes-genital_pregnancy.html
2. Treat outbreaks with oral acyclovir (400 mg po TID x 7-10 days). In the presence of life-threatening maternal HSV infection, IV acyclovir is indicated.Patients with frequent recurrences of herpes should receive Acyclovir 400 mg po TID initiated at 34-36 weeks. Any patient with greater than one recurrence in a year is a

reasonable candidate for prophylaxis in pregnancy, as there is no evidence of any harm.

3. Valacyclovir is a reasonable for acute and suppressive alternative if you are worried about adherence since dosing is easier. However, it is more expensive and there is less safety and efficacy data, although the limited available data do demonstrate safety.

Table 1. Recommended Doses of Antiviral Medications for Herpes in Pregnancy.

Indication	Acyclovir	Valacyclovir
Primary or first-episode infection	400 mg orally, three times daily, for 7–10 days*	1 g orally, twice daily, for 7–10 days*
Symptomatic recurrent episode	400 mg orally, three times daily, for 5 days or 800 mg orally, twice daily, for 5 days	500 mg orally, twice daily, for 3 days or 1 g orally, daily, for 5 days
Daily suppression	400 mg orally, three times daily, from 36 weeks estimated gestational age until delivery	500 mg orally, twice daily, from 36 weeks estimated gestational age until delivery
Severe or disseminated disease	5–10 mg/kg, intravenously, every 8 hours for 2–7 days, then oral therapy for primary infection to complete 10 days	

*Treatment may be extended if healing is incomplete after 10 days of therapy.

Data from Centers for Disease Control and Prevention. Genital HSV infections. In: 2015 sexually transmitted diseases treatment guidelines. Atlanta, GA: CDC; 2015. Available at: https://www.cdc.gov/std/tg2015/herpes.htm. Retrieved January 6, 2020.

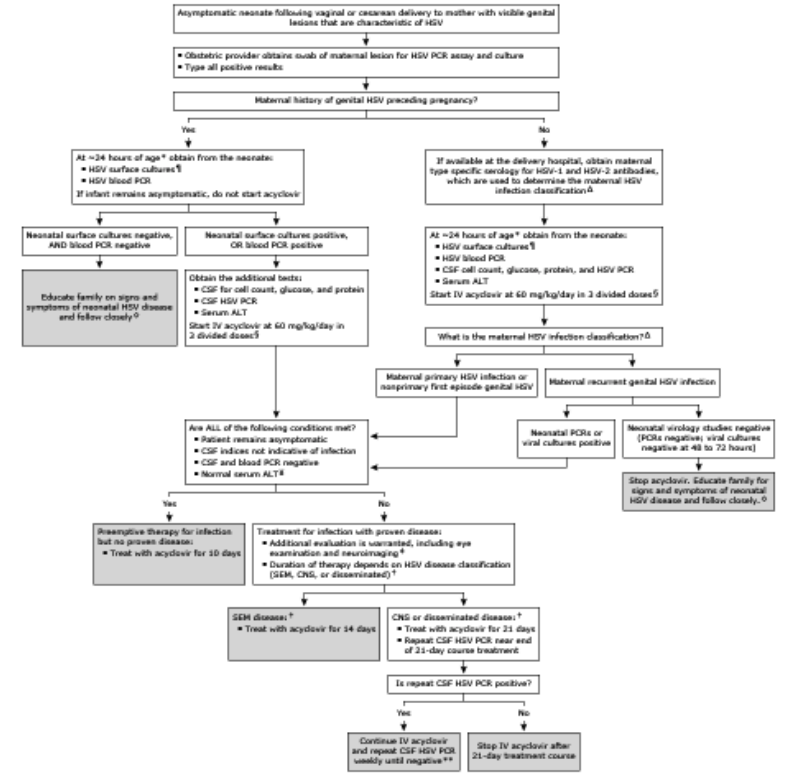
ACOG PB Management of HSV in Pregnancy 2020

4. Patients should be inspected for lesions in labor on vulva, vagina or cervix. This means **doing a speculum exam** on presentation. If lesions are present (even if crusted) or prodromal symptoms are present, c-section delivery is indicated.

5. Even if no lesions are present**, patients with a primary outbreak in the third trimester** of pregnancy may be recommended to have a c-section to decrease the risk of neonatal transmission due to prolonged viral shedding. Consult FMOB.

6. Infants born to patients with lesions present at birth, ***even if born by c-section***, must be assessed for what work up or treatment is indicated. Work up will depend on if this is a primary outbreak, duration of ROM, and mode of delivery. Consult Peds ID after birth for management plan. See below.

Algorithm for the evaluation and management of asymptomatic neonates after vaginal or cesarean delivery to women with active genital herpes lesions



This algorithm should be applied only in facilities where access to PCR and type-specific serologic testing is readily available and turnaround time for test results is appropriately short. In situations where this is not possible, the approach detailed in the algorithm will have limited, and perhaps no, applicability.

HSV: herpes simplex virus; PCR: polymerase chain reaction; CSF: cerebrospinal fluid; ALT: alanine aminotransferase; IV: intravenous; SEM: skin, eye, and mouth; CNS: central nervous system.

* Evaluation and treatment is indicated prior to 24 hours of age if the infant develops signs and symptoms of neonatal HSV disease (eg, mucocutaneous vesicles, seizures, lethargy, respiratory distress, thrombocytopenia, coagulopathy, hypothermia, sepsis-like illness, hepatomegaly, ascites, or markedly elevated transaminases). In addition, immediate evaluation and treatment may be considered if there is prolonged rupture of membranes (>4 to 6 hours) or if the infant is preterm (≤37 weeks gestation).

¶ Surface cultures should be obtained from ALL of the following sites: conjunctivae, mouth, nasopharynx, and rectum. In addition, if the neonate had a scalp electrode placed, its site should be cultured.

Δ For details regarding determining maternal HSV infection classification, refer to UpToDate's content on genital HSV infection in pregnancy.

◊ Discharge after 48 hours of negative HSV cultures (and negative PCRs) is acceptable if other discharge criteria have been met, there is ready access to medical care, and a person who is able to comply fully with instructions for home observation will be present. If any of these conditions are not met, the infant should be observed in the hospital until HSV cultures are finalized as negative or are negative for 96 hours after being set up in cell culture, whichever is shorter.

§ The dose of acyclovir must be adjusted for neonates with renal impairment and/or weight <1 kg. Refer to Lexicomp for additional dosing information. If IV acyclovir is not available, ganciclovir is an alternative. Refer to UpToDate's content on management of neonatal HSV infection for additional information.

¥ Serum ALT values in neonates may be elevated due to noninfectious causes (eg, delivery-related perfusion). For this algorithm, ALT values >2 times the upper limit of normal may be considered suggestive of neonatal disseminated HSV disease for HSV-exposed neonates.

‡ Refer to UpToDate's content on clinical features and diagnosis of neonatal HSV infection for more details.

† Refer to UpToDate's content on diagnosis of neonatal HSV infection for details of distinguishing between the three disease categories (SEM, CNS, and disseminated disease).

** Consultation with a pediatric infectious disease specialist is warranted in cases of persistently positive CSF HSV PCR.

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Neonatal HSV Management from UpToDate – does not replace Peds ID Consult!

I. HIV

Pregnant patients with HIV infection should be considered for treatment based on the same parameters as non-pregnant infected patients. Many antiretroviral 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. Delivery planning is based on viral load at the time of delivery. Pediatric infectious disease and MFM consultants should also be involved in delivery planning.

Rapid HIV testing is available on L&D. These patients should be on the co-follow list.

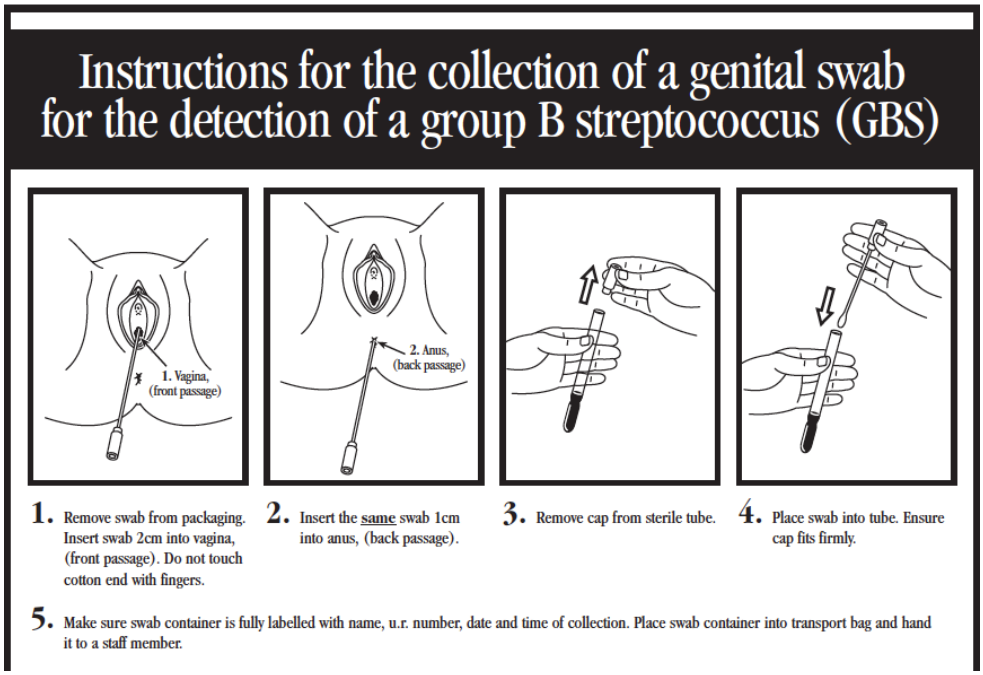
XXXIV. GROUP B STREP INFECTION IN PREGNANCY

ACOG released new recommendations for the prevention of GBS in 2019, reaffirmed 2022. Please read this Committee Opinion for more details. Charts below are pasted from ACOG.

A. Screening for GBS:
   1. All pregnant patients should undergo antepartum screening for **GBS at 36 0/7–37 6/7 weeks of gestation, regardless of planned mode of delivery**, unless intrapartum antibiotic prophylaxis for GBS is indicated because of GBS bacteriuria during the pregnancy or because of a history of a previous GBS infected newborn. This new recommended timing for screening provides a 5-week window for valid culture results that includes births that occur up to a gestational age of at least 41 0/7 weeks. *Obtaining a swab at 35 weeks is still recommended if you anticipate induction at 37-39 weeks.*
   2. If pregnant after 41 0/7 weeks and GBS negative, repeat GBS screening is reasonable.
   3. If a patient remains pregnant 5 weeks after a negative GBS screen during preterm labor, the GBS screen should be repeated if she has recurrent preterm labor or at 36 0/7 - 37 6/7 weeks.
   4. If a patient with preterm labor screened positive and did not deliver, she does not need testing again and should be treated as GBS positive for the duration of her pregnancy.
   5. If a patient had GBS bacteriuria during the current pregnancy or a previous infant with GBS disease, screening is not necessary. These patients should be treated as GBS positive.
   6. Rapid GBS: If a patient 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 the next 4-6 hours is anticipated. Antibiotics may then stop if GBS is negative.
   7. Do not use a rapid GBS test on L&D < 37 weeks.

B. How to Collect a GBS swab

1. Swab the vaginal introitus, followed by the rectum (**inserting the swab through the anal sphincter**) (CDC Instructions for collection) and place in a transport medium (same as we use for throat cultures). Use one swab for both the vaginal and rectal cultures unless there is concern about HPV or herpes transmission.
2. Results should be available in 48 hrs.
3. Self-collection is an option and is encouraged.



From CDC website

C. Intrapartum prophylaxis indicated if:
1. Previous infant with invasive GBS.
2. GBS bacteriuria of any CFU during current pregnancy.
3. Positive GBS screening during current pregnancy (unless a planned C-section in the absence of labor or SROM).
4. Unknown GBS status (culture not done, incomplete, results unknown) and any of the following:
   - delivery at <37 weeks
   - SROM ≥18 hrs
   - intrapartum temp ≥100.0^{F} (Note: in this case, the patient needs antibiotics for presumed chorioamnionitis that includes GBS coverage.)
   - **H/o GBS colonization in a previous pregnancy (risk of GBS carriage is 50% in current pregnancy).** Health care providers also may consider discussing the option of empiric intrapartum antibiotic prophylaxis as a shared decision-making process while waiting for rapid testing results.
5. If the rapid GBS is negative, treatment recommended if ROM ≥18 hours, so starting treatment at 14 hours unless delivery is imminent is advisable.

Table 1. Indications for Intrapartum Antibiotic Prophylaxis to Prevent Neonatal Group B Streptococcal Early-Onset Disease*

Intrapartum GBS Prophylaxis Indicated	Intrapartum GBS Prophylaxis Not Indicated
Maternal history	
Previous neonate with invasive GBS disease	Colonization with GBS during a previous pregnancy (unless colonization status in current pregnancy is unknown at onset of labor at term)
Current pregnancy	
Positive GBS culture obtained at 36 0/7 weeks of gestation or more during current pregnancy (unless a cesarean birth is performed before onset of labor for a woman with intact amniotic membranes)	Negative vaginal–rectal GBS culture obtained at 36 0/7 weeks of gestation or more during the current pregnancy
GBS bacteriuria during any trimester of the current pregnancy	Cesarean birth performed before onset of labor on a woman with intact amniotic membranes, regardless of GBS colonization status or gestational age
Intrapartum	
Unknown GBS status at the onset of labor (culture not done or results unknown) and any of the following: Birth at less than 37 0/7 weeks of gestation Amniotic membrane rupture 18 hours or more Intrapartum temperature 100.4°F (38.0°C) or higher* Intrapartum NAAT result positive for GBS Intrapartum NAAT result negative but risk factors develop (ie, less than 37 0/7 weeks of gestation, amniotic membrane rupture 18 hours or more, or maternal temperature 100.4°F (38.0°C) or higher Known GBS positive status in a previous pregnancy	Negative vaginal–rectal GBS culture obtained at 36 0/7 weeks of gestation or more during the current pregnancy, regardless of intrapartum risk factors Unknown GBS status at onset of labor, NAAT result negative and no intrapartum risk factors present (ie, less than 37 0/7 weeks of gestation, amniotic membrane rupture 18 hours or more, or maternal temperature 100.4°F (38°C) or higher

From ACOG CO on GBS Prevention

D.

1. Planned C-section with no labor and no SROM.
2. Negative routine vaginal and rectal GBS screening late in current pregnancy, regardless if ROM > 18 hours.

E. Patients with **only a rapid GBS** that is negative **<u>do</u>** need antibiotic prophylaxis if ROM>18 hours

F. 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.

G. If pen-allergic:

1. Determine if history of mild allergy (rash), or high risk of anaphylaxis (h/o hives, wheezing, anaphylaxis, angioedema).
2. If feasible, consider PCN allergy skin testing. Most patients who report a PCN allergy are PCN tolerant.

3. If pen allergic and not at high risk anaphylaxis:
   B. Cefazolin 2 grams IV initial dose, then 1 gram IV q 8 hrs until delivery
4. If pen allergic and at high-risk anaphylaxis, ask the lab to check sensitivities when you receive the culture result.

- GBS susceptible to Clinda and Erythromycin:
  - Clindamycin 900mg IV q 8 hrs until delivery
- GBS resistant to Clindamycin or Erythromycin (>20%) or resistance unknown:
  - Vancomycin

Ideally, note sensitivities and recommended antibiotic plans on the problem list before the patient presents in labor.

Obstetric interventions should not be delayed solely to provide 4 hours of antibiotic administration before birth.

[Table 2] Penicillin Allergy: Low Risk or High Risk of Anaphylaxis or Severe Non-IgE Mediated Reaction

Risk	Definition
Low Risk	• Nonspecific symptoms unlikely to be allergic (gastrointestinal distress, headaches, yeast vaginitis)
	• Nonurticarial maculopapular (morbilliform) rash without systemic symptoms*
	• Pruritis without rash
	• Family history of penicillin allergy but no personal history
	• Patient reports history but has no recollection of symptoms or treatment
High Risk	• High risk for anaphylaxis: A history suggestive of an IgE-mediated event†: pruritic rash, urticaria (hives), immediate flushing, hypotension, angioedema, respiratory distress or anaphylaxis‡
	• Recurrent reactions, reactions to multiple beta-lactam antibiotics, or positive penicillin allergy test
	• High risk for severe non IgE-mediated reaction: Severe rare delayed-onset cutaneous or systemic reactions, such as eosinophilia and systemic symptoms/drug-induced hypersensitivity syndrome, Stevens-Johnson syndrome, or toxic epidermal necrolysis§

*This rash typically occurs several days after initial exposure and is limited to the skin (mucous membranes, palms and soles are not involved). May be mildly pruritic but not urticarial.

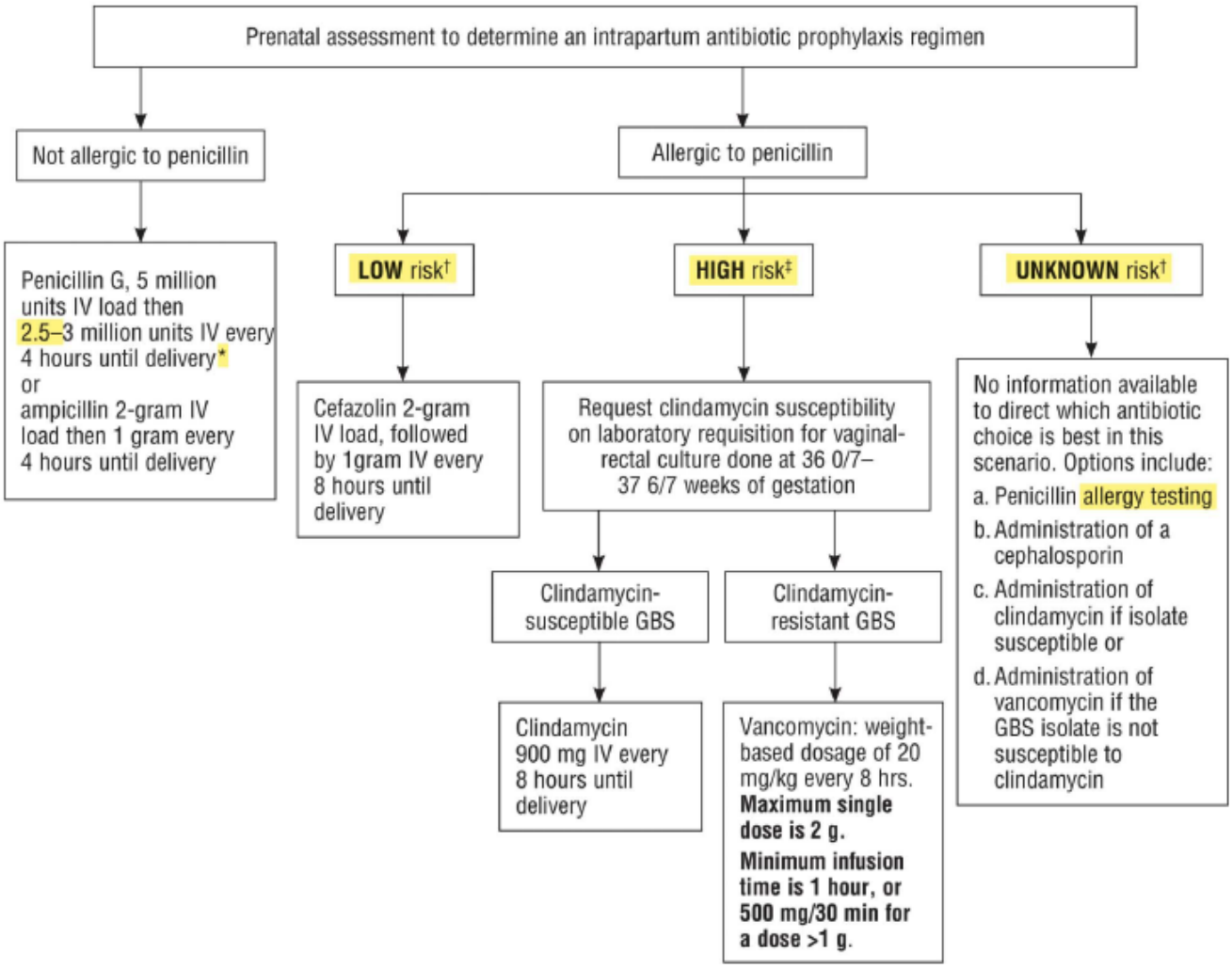
†Anaphylactic reactions are IgE mediated and typically occur within 1–6 hours after exposure to a penicillin.

‡Some institutions have performed penicillin allergy testing in pregnant women with a history suggestive of an IgE-mediated event (classified by some experts as a moderate risk of anaphylaxis): urticaria (hives), isolated urticaria occurring greater than 10 years prior, or intense pruritic rash. Penicillin allergy testing can be achieved in these situations through referral to an allergy and immunology specialist.

§Severe rare delayed-onset reactions, such as eosinophilia and systemic symptoms/drug-induced hypersensitivity syndrome, Stevens-Johnson syndrome, or toxic epidermal necrolysis are T-cell mediated and typically occur days to weeks after initiation of antibiotic treatment. Some experts consider these a contraindication to standard penicillin allergy testing.

From ACOG CO on GBS Prevention

Intrapartum Treatment of GBS



[Figure 3] Determination of Antibiotic Regimen for Group B Streptococcus Prophylaxis in Labor. Abbreviations: GBS, group B streptococcus; IV, intravenous. *Doses ranging from 2.5 to 3.0 million units are acceptable for the doses administered every 4 hours following the initial dose. The choice of dose within that range should be guided by which formulations of penicillin G are readily available in order to reduce the need for pharmacies to specially prepare doses. †Individuals with a history of any of the following: nonspecific symptoms unlikely to be allergic (gastrointestinal distress, headaches, yeast vaginitis), nonurticarial maculopapular (morbilliform) rash without systemic symptoms, pruritis without rash, family history of penicillin allergy but no personal history, or patient reports history but has no recollection of symptoms or treatment. ‡Individuals with a history of any of the following after administration of a penicillin: a history suggestive of an IgE-mediated event: pruritic rash, urticaria (hives), immediate flushing, hypotension, angioedema, respiratory distress or anaphylaxis; recurrent reactions, reactions to multiple beta-lactam antibiotics, or positive penicillin allergy test; or severe rare delayed-onset severe cutaneous or systemic reactions, such as eosinophilia and systemic symptoms/drug-induced hypersensitivity syndrome, Stevens-Johnson syndrome, or toxic epidermal necrolysis. (Modified from Verani JR, McGee L, Schrag SJ. Prevention of perinatal group B streptococcal disease: revised guidelines from CDC, 2010. Division of Bacterial Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention [CDC]. MMWR Recomm Rep 2010;59(RR-10):1–36.)(This Committee Opinion, including Table 1, Box 2, and Figures 1–3, updates and replaces the obstetric components of the CDC 2010 guidelines, "Prevention of Perinatal Group B Streptococcal Disease: Revised Guidelines From CDC, 2010.")

From ACOG CO on GBS Prevention

H. 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.

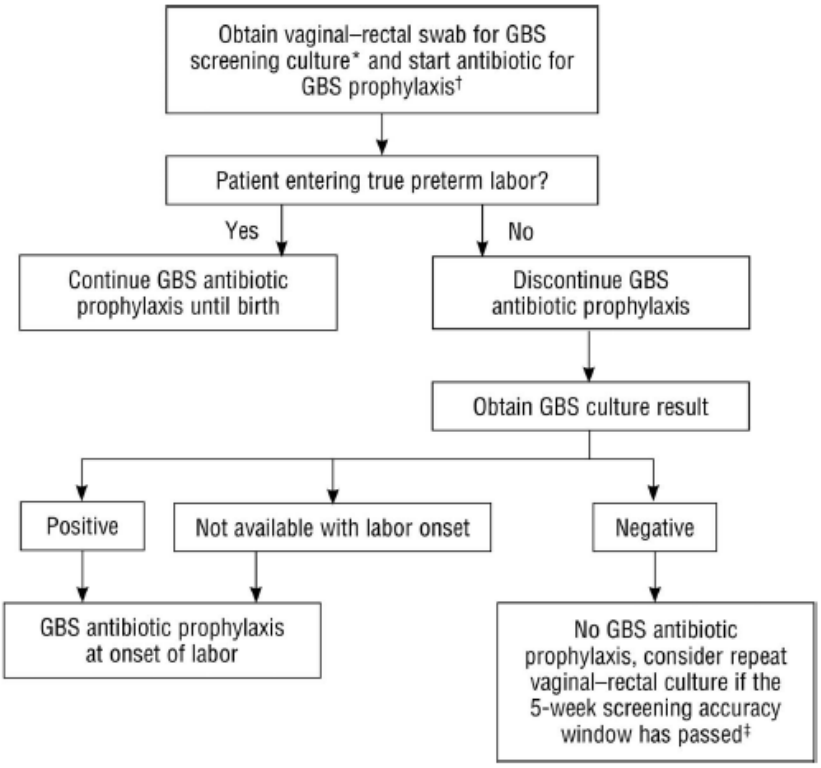


Figure 1. Management of Women With Preterm Labor <37 0/7 Weeks of Gestation. Abbreviation: GBS, group B streptococcus. *If a patient has undergone vaginal–rectal GBS screening culture within the preceding 5 weeks, the results of that culture should guide management. Women colonized with GBS should receive intrapartum antibiotic prophylaxis. Although a negative GBS culture is considered valid for 5 weeks, the number of weeks is based on early-term screening and data in preterm gestations is lacking. †See Figure 3 for recommended antibiotic regimens. ‡A negative GBS culture is considered valid for 5 weeks. However, the number of weeks is based on early-term screening and data in preterm gestations is lacking. If a patient with preterm labor is entering true labor and had a negative GBS culture more than 5 weeks previously, she should be rescreened and treated according to this algorithm at that time. Modified from Verani JR, McGee L, Schrag SJ. Prevention of perinatal group B streptococcal disease: revised guidelines from CDC, 2010. Division of Bacterial Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention (CDC). MMWR Recomm Rep 2010;59(RR-10):1–36. (This Committee Opinion, including Table 1, Box 2, and Figures 1–3, updates and replaces the obstetric components of the CDC 2010 guidelines, "Prevention of Perinatal Group B Streptococcal Disease: Revised Guidelines From CDC, 2010.")

From ACOG CO on GBS Prevention

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XXXV. UTI IN PREGNANCY

A. Scope of problem
1. 4-10% of pregnant patients have asymptomatic bacteriuria (bacteria in urine without pus or symptoms). Of these, 25-30% will develop a UTI. Some pregnant patients will then go on to develop pyelonephritis, which is associated with PTL, FGR, sepsis and ARDS, which makes it important to screen and treat bacteriuria in pregnancy.

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

1. GBS bacteriuria at levels of 10^5 CFU/mL (100,000) or greater should be treated, whether symptomatic or asymptomatic.
2. GBS bacteriuria < 10^5 CFU/mL does not require treatment for UTI, but intrapartum antibiotic prophylaxis is recommended.

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 CFU/mL especially for single colonies, gram (-) organisms may be significant and should be treated if the patient is symptomatic.
     - Decrease false positives by getting clean catch specimens and treating only pure colonies.
     - Avoid catheterization to ensure clean catch since this can introduce infection, unless unable to obtain acceptable uncontaminated clean catch on multiple attempts.
2. Asymptomatic Bacteriuria
   All prenatal patients are recommended to be screened with 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 two weeks after treatment.
   - Evaluate for preterm labor and teach about symptoms.
   - Screening urine cultures are recommended q month once cleared, though if not feasible should be done at least once a trimester once cleared.

- If a patient has two culture positive infections, then antibiotic prophylaxis is recommended for the remainder of pregnancy. (See dosage in pyelonephritis section.)

*Group B Strep bacteriuria should be treated as below with the 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 higher in these patients.

2. Pyelonephritis
   a. Hospitalize unless mild symptoms, adequate po intake and prior to 20 weeks EGA.
   b. IV antibiotics until afebrile 24 to 48 hours, then oral to complete a two-week course is recommended. Repeat urine culture after treatment.
   c. Recommend starting with ceftriaxone one-gram IV q 24 hours. If the patient appears more acutely ill, it may be wise to treat with broader spectrum antibiotics such as 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.
   d. May initially give intravenous fluid at 200 cc /hr for one liter or bolus if dehydrated but it is important to avoid fluid overload to prevent ARDS/pulmonary edema which can occur in pregnancy in the setting of pyelonephritis.
   e. After urine culture is clear, suppressive antibiotic therapy is recommended for the duration of pregnancy. One study shows use of suppressive therapy decreased the recurrence of pyelo to 0% from 18% without.
   f. Suppressive tx: Nitrofurantoin 100 mg po QHS or Keflex 250 mg po QHS.
   g. If no response to IV therapy within 48-72 hours, rule out other etiologies: renal stones, abscess, etc.
   h. Remember - pain of pyelo can mask PTL!
   i. Follow patients closely with urine cultures monthly
   j. Consider urologic work-up after delivery.

UTI AND ASYMPTOMATIC BACTERIURIA ORAL THERAPEUTICS

Drug	Dose	Comments
Cephalexin	500 mg po QID x 7 days	
Amoxicillin/ Clavulanic Acid	250/125 mg po TID x 5 days	More GI side effects
Nitrofurantoin	100 mg po QID x 7 days	Avoid the first trimester and third trimester of other options available. **Do not use it for pyelo.** Risk of hemolytic anemia with G6PD deficiency when used in the third trimester.
Fosfomycin	3g po x 1	Excellent for MDRO when no other oral options are available. May require a prior authorization.
Cefpodoxime	100 mg po q 12 hr x 5-7 days	
TMP-SMX	800/160 mg po BID x 3 days	Not recommended except in the second trimester if allergic and/or resistant to other organisms. (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.)

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XXXVI. ABNORMAL PAP SMEAR IN PREGNANCY

Patients with an abnormal pap smear in pregnancy should be followed according to the "ASCCP Risk-Based Management Consensus Guidelines for abnormal cervical cancer screening tests"for non-pregnant patients. https://www.asccp.org/management-guidelines 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. Those with LGSIL should be managed based on their age group: e.g. repeat pap if age 21-24 and offered colposcopy in pregnancy if >24. While colposcopy 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 patients. 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.

XXXVII. THYROID SCREENING IN PREGNANCY

A. Universal screening of asymptomatic women for hypothyroidism in the first trimester of pregnancy is controversial.
B. The American Thyroid Association Guidelines recommends that the following patients have screening for thyroid disease with a TSH:
   1. A history of hypothyroidism/hyperthyroidism or current symptoms/signs of thyroid dysfunction
   2. Known thyroid antibody positivity or presence of a goiter
   3. Age > 30 years
   4. Type 1 diabetes or other autoimmune disorders
   5. History of pregnancy loss, preterm delivery, or infertility
   6. History of head or neck radiation or prior thyroid surgery
   7. Family history of autoimmune thyroid disease or thyroid dysfunction
   8. Morbid obesity (BMI > 40)
   9. Use of amiodarone or lithium, or recent administration of iodinated radiologic contrast
   10. Residing in an area of known moderate to severe iodine insufficiency

C. ACOG also recommends screening those with type 2 diabetes.

XXXVIII. HYPERTHYROIDISM IN PREGNANCY

Please consult with the MCH consultants and/or endocrinology for management of patients with hyperthyroidism. All patients with Graves' should be on co-follow.

Hyperthyroidism occurs in < 1% of pregnancies. Grave's disease accounts for 95% of these cases. Graves' is caused by TSHRab that stimulates the TSH receptor activating thyroid hormone synthesis as well as thyroid growth often causing diffuse goiter.

A. Diagnosis
   1. A TSH can be physiologically suppressed to as low as 0.03 or even undetectable in pregnancy and be normal. Total binding globulin (TBG) is elevated in normal pregnancy and can cause physiologically normal elevations in TT4 and TT3. FT3 is not a validated test, is rarely ordered, but sometimes calculated. A normal FT3 and an elevated TT4 is consistent with TBG elevation and not true hypothyroidism.
   2. If TSH is found to be low, check FT4/TT4 and TT3. While FT4 is more important than TT4, the assays are complicated and getting both if possible is recommended.
   3. If the TSH is suppressed and the FT4/TT4, or TT3 is elevated the diagnosis is most likely Graves' disease.
      a. If no prior h/o thyroid disease and no goiter or endocrine ophthalmopathy, gestational transient thyrotoxicosis is more likely.

4. A thyroid stimulating immunoglobulin (TSI) tests for thyroid receptor stimulating antibodies (TSHRab stimulating antibodies as well) and a TT3 can help distinguish the diagnosis. If positive, then diagnosis is Graves.

B. Treatment - copied from the American Thyroid Association Guidelines See their Guidelines for more details.
   1. For a newly pregnant patient with euthyroid Graves on a low dose of MMI (≤ 5–10 mg/d) or PTU (≤ 100–200 mg/d), you should consider discontinuing all antithyroid medication given potential teratogenic effects.
      a. The decision to stop medication should consider the disease history, goiter size, duration of therapy, results of recent thyroid function tests, TSHRAb measurement, and other clinical factors.
      b. Following cessation of antithyroid medication, thyroid function testing (TSH, and FT4/ TT4) and clinical examination should be performed every 1–2 weeks to assess patient l and fetal thyroid status. If the pregnant patient remains clinically and biochemically euthyroid, test intervals may be extended to 2–4 weeks during the second and third trimester
      c. At each assessment, the decision to continue conservative management (withholding antithyroid medication) should be guided both by the clinical and the biochemical assessment of maternal thyroid status.
   2. Patients at high risk of developing thyrotoxicosis: Factors predicting high clinical risk include being currently hyperthyroid, or requirement of > 5–10 mg/d MMI or > 100–200 mg/d PTU to maintain a euthyroid state. In such cases:
      a. PTU is recommended for the treatment of maternal hyperthyroidism through 16 weeks of pregnancy.
      b. Pregnant patients receiving MMI in need continuing therapy during pregnancy should be switched to PTU as early as possible
      c. When shifting from MMI to PTU, a dose ratio of approximately 1:20 should be used (e.g., MMI 5 mg/d = PTU 50 mg twice daily).
      d. If therapy is required after 16 weeks' gestation, it remains unclear whether PTU should be continued or therapy changed to MMI. As both medications are associated with potential adverse effects and shifting potentially may lead to a period of less-tight control, no recommendation regarding switching antithyroid drug medication can be made at this time.

C. Monitoring:
   1. In patients being treated for hyperthyroidism in pregnancy, FT4/TT4 and TSH should be monitored approximately every 4 weeks
   2. Antithyroid medication during pregnancy should be administered at the lowest effective dose of MMI or PTU, targeting maternal serum FT4/TT4 at the upper limit or moderately above the reference range.

3. If the patient has a past history of Grave's disease treated with ablation (radioiodine or surgery), a TSI is recommended at initial thyroid function testing during early pregnancy.
4. If TSI concentration is elevated in early pregnancy, repeat testing should occur at weeks 18–22.
5. If TSI is undetectable or low in early pregnancy, no further TSI testing is needed.
6. If a patient is being treated with medication for Graves' hyperthyroidism when pregnancy is confirmed, a maternal serum determination of TSI is recommended.
7. If the patient requires treatment for Graves' through mid-pregnancy, a repeat determination of TSI is again recommended at weeks 18–22.
8. If elevated TSI is detected at weeks 18–22 or the gestational parent is on medication in the third trimester, a TSI measurement should again be performed in late pregnancy (weeks 30–34) to evaluate the need for neonatal and postnatal monitoring.

D. Fetal Surveillance:
   1. Fetal surveillance is recommended in patients who have uncontrolled hyperthyroidism in the second half of pregnancy, and in patients with high TSI levels detected at any time during pregnancy. **A consultation with a maternal–fetal medicine specialist is recommended.** Monitoring may include ultrasound to assess heart rate, growth, amniotic fluid volume, and the presence of fetal goiter. A TSHRab stimulating serum concentration > 5IU/L (3x upper limit of normal) in the 2nd or third trimester predicts neonatal hyperthyroidism with 100% sensitivity and 43% specificity.
E. Delivery: Test umbilical cord blood at birth for TSHRAb by collecting cord blood in a green top tube to help determine risk of neonatal graves. In most cases, TSHRAb is done at birth rather than TSI as we receive results several days sooner. See Neonatal Graves article on wiki.
   Please see the American Thyroid Association Guideline for more information.

XXXIX. HYPOTHYROIDISM IN PREGNANCY

Overt hypothyroidism complicates 2-10 per 1000 pregnancies. Hashimoto's thyroiditis is the most common cause of hypothyroidism in pregnancy and is caused by gradual thyroid failure which can be with or without goiter due to autoimmune destruction of the thyroid gland.

A. Confirm that the reason for hypothyroidism is not due to a history of Graves' and is from Hashimoto's. Patients with a history of Graves' should be recommended to have a TSI checked to determine risk of Neonatal Graves'.
B. Patients planning pregnancy should have a goal TSH of < 2.5.
C. Diagnosis in pregnancy: See chart below

1. TSH > 2.5-10 should be evaluated with TPOAb and start treatment if positive. (Thyroid Peroxidase Antibody).
2. If TSH > 10, start levothyroxine.

D. Treatment: Target TSH to < 2.5 or half trimester-specific range.
1. As soon as she becomes pregnant, increase levothyroxine by 25-30%. One option is to increase levothyroxine from 7 tabs a week (1 po q day) to 9 tabs a week.
2. Use levothyroxine for treatment. *Do not use other preparations such as T3 or desiccated thyroid (Armour thyroid).*
3. Check TSH at least once between 26 and 32 weeks
4. Patients with hypothyroidism or at risk for hypothyroidism should be monitored with serum TSH every 4 weeks until mid-gestation, when dosage changes have been made, and at least once near 30 weeks.
5. Reduce levothyroxine dose to pre-pregnancy dose postpartum and recheck TSH in 6 weeks.
6. Antenatal surveillance is generally not necessary.
7. Please see the American Thyroid Association Guidelines 2017 for more information.
8. Call MCH fellow or FMOB for questions. Residents should discuss with MCH faculty prior to initiating treatment.

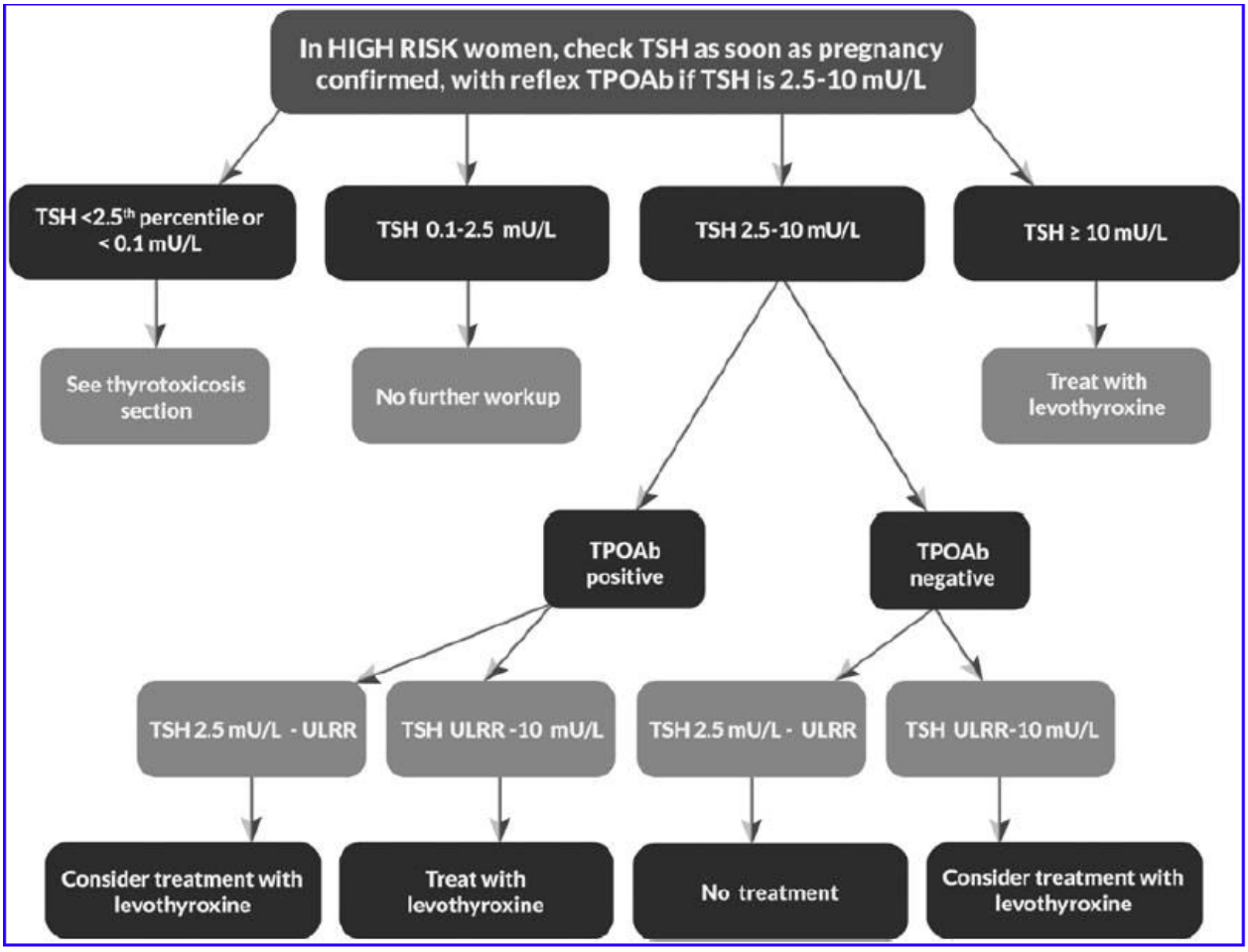

FIG. 1. Testing for thyroid dysfunction in pregnancy. ULRR, upper limit of the reference range.

From the 2017 Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease During Pregnancy and the Postpartum

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XL. OBESITY IN PREGNANCY

Please see the MFM SOP for more details.

XLI. NEURAXIAL ANESTHESIA AND ANTICOAGULATION

Please see the SOP on Neuraxial Anesthesia and Anticoagulation.

XLII. ANEMIA IN PREGNANCY

At UNM, please refer patients with anemia, Hct < 30 or Hb <10 to co-follow. If unresponsive or unable to tolerate oral iron, they may need an iron transfusion and MCH Fellow can help arrange.

Anemia in pregnant populations is defined as less than Hb 11g/dL and hct 33% in first trimester, Hb 10.5g/dL and Hb 32% in 2nd trimester, and Hb 11g/dL and 33% third trimester.

Below, has simplified this with a general guideline, but some may still want to follow strict definitions.

As a general guideline if Hb <11 a trial of oral iron is recommended and recheck of levels in 4-6 weeks. Usually every other day is preferred as better tolerated and once daily dosing is preferred as trials show no advantage to bid or tid dosing. A 2020 RCT https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2772395 found no benefit of vitamin C supplementation to increase absorption, which is commonly recommended. Nausea and constipation are frequent side effects occurring in about a third of patients with common formulations.

If iron deficiency has not been confirmed but persistent, get a ferritin level to confirm. If Ferritin > or = 30 and mcv is < 80 Hb electrophoresis should be performed, If > 90 obtain B12 and Folate levels.

If a patient reaches 28 weeks with confirmed iron deficiency anemia and Hb < 9 or < 10 with high-risk condition (examples include bleeding disorders, history of gastric bypass, Jehovah's witness, multiple gestation, known placental abruption, previa or accreta) IV iron should be recommended.

At least 1000 mg of IV iron for moderate to severe iron deficiency anemia is recommended. IV iron is better tolerated and achieves higher levels of ferritin and hb after 4 weeks compared to oral iron in either antepartum or postpartum periods. **Iron sucrose is the most available formulation and is 200-300 mg usually requiring 3-5 doses to replete iron stores**. It can be given daily, every other day or weekly and levels should be rechecked in 4-6 weeks. Alternative formulations and 1000 mg formulations are available but may require test dose and post infusion monitoring as higher risk of anaphylaxis.

In the postpartum period IV iron can be considered if hb < 9 and concerns for poor tolerability for oral iron.

☐ <14 weeks & Hb <11→Oral iron, recheck 4-6 wks *
☐ 14 to 28 weeks & Hb 9-11→ Oral iron, recheck 4-6 weeks* →Consider IV iron <9 or persistent or risk factors
☐ > 28 weeks & Hb < 11→Oral iron, recheck 4-6 weeks*→Consider IV iron if no change with oral iron or hb < 10
☐ *If no change after oral iron →Ferritin Ferritin < 30 presumed iron deficiency anemia

Ferritin > 30 and MCV < 80 →hb electrophoresis Ferritin > 30 and MCV > 90→ B12 , folate testing
Oral: daily or every other day iron - avoid dosing 2-3 times daily IV: iron sucrose 200-300 mg (or alternative formulation) every other day or weekly to replete 1000mg After completion of IV iron, repeat CBC in 4-6 weeks

Li N, Zhao G, Wu W, et al. The Efficacy and Safety of Vitamin C for Iron Supplementation in Adult Patients With Iron Deficiency Anemia: A Randomized Clinical Trial. *JAMA Netw Open.* 2020;3(11):e2023644. doi:10.1001/jamanetworkopen.2020.23644

Düzen Oflas N, Demircioğlu S, Yıldırım Doğan N, Eker E, Kutlucan A, Doğan A, Aslan M, Demir C. Comparison of the effects of oral iron treatment everyday and every other day in female patients with iron deficiency anaemia. Intern Med J. 2020 Jul;50(7):854-858. doi: 10.1111/imj.14766. PMID: 31994303.

Advice adapted from:
https://www.contemporaryobgyn.net/view/iron-deficiency-anemia-in-pregnancy-and-the-role-of-intravenous-iron

XLIII. FETAL GROWTH RESTRICTION (FGR)

Review SMFM article on FGR for more information.

A. Definition:

1. Fetal growth restriction (aka Intrauterine Growth Restriction IUGR, an antiquated term) is defined as an **estimated fetal weight (EFW) <10% and /or abdominal circumference (AC) < 10% even if EFW is > 10%.**
2. SMFM is no longer recommending a distinction between symmetric and asymmetric FGR since HC/AC was not found to be an independent predictor of adverse pregnancy outcomes.

B. Diagnosis of FGR

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 32-36 weeks
3. Patients at high risk for FGR due to history of FGR in previous pregnancy:
   a. Order growth US q 4 weeks starting at 26 weeks.
4. Review EGA based on all ultrasounds and LMP and recalculate EDD if indicated to make sure the patient has FGR and not inaccurate dating.
5. Review ratios of fetal measurements on all ultrasounds.
6. Review interval growth between ultrasounds.

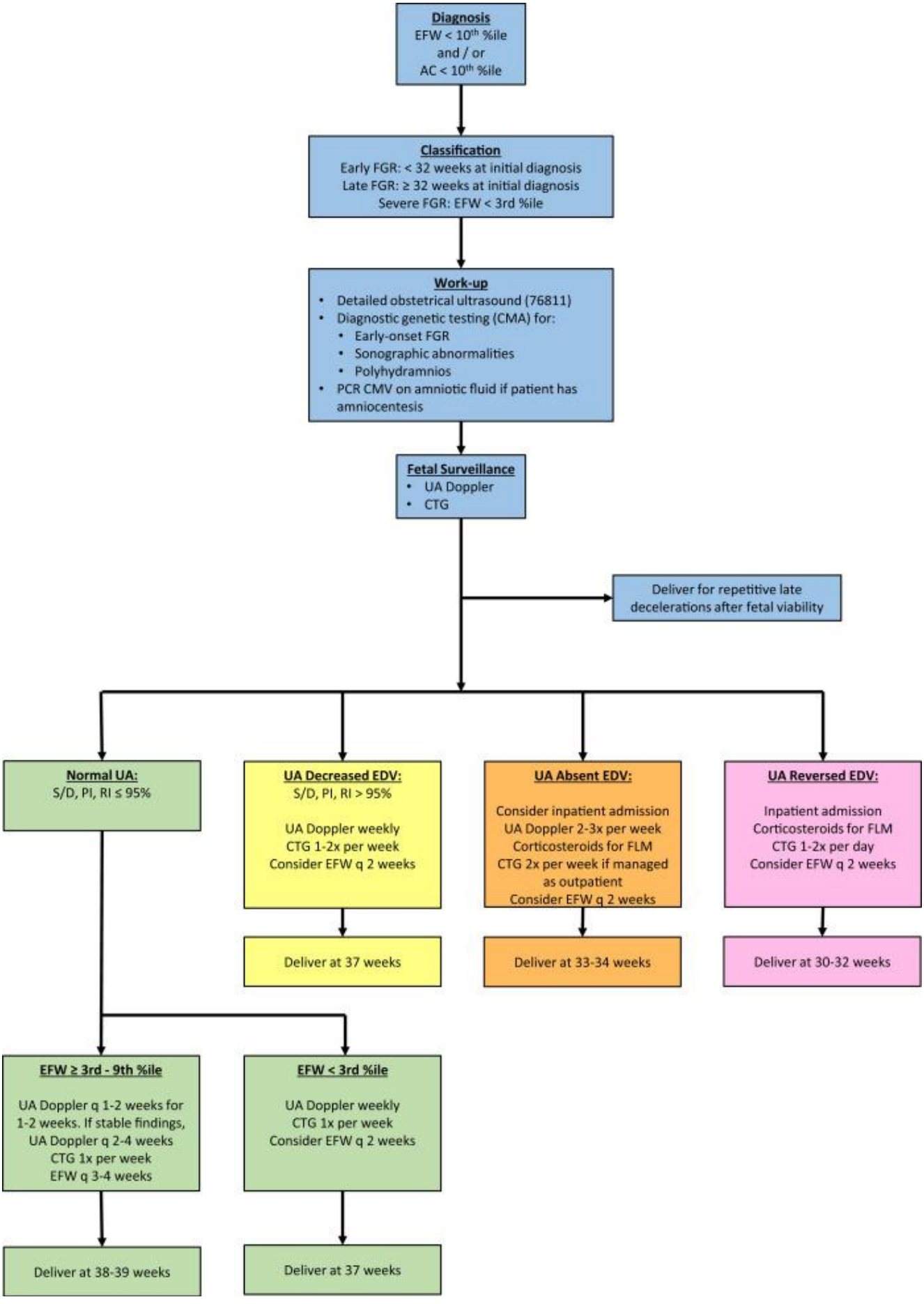
C. Pregnancy complicated by FGR is at high risk for:

1. Fetal Demise
2. Fetal Distress in Labor

3. Neonatal Complications
4. The highest risk is when the EFW < 3%.

D. Management of FGR

1. A detailed anatomic ultrasound should be performed with initial diagnosis (if not previously performed) since 20% of early onset cases of FGR are associated with fetal chromosomal abnormalities.
2. Patients should be offered fetal diagnostic testing, including chromosomal microarray analysis (CMA) when FGR is detected with a fetal malformation and or polyhydramnios, regardless of gestational age.
3. CMA should be offered to patients with unexplained isolated FGR if diagnosed before 32 weeks.
4. TORCH titers are no longer routinely recommended. **SMFM now recommends against screening for toxoplasmosis, rubella, or HSV in the absence of other risk factors**. CMV PCR can be ordered in patients with unexplained FGR who elect diagnostic testing with amniocentesis, but should not be ordered in other patients not undergoing amniocentesis.
5. Umbilical artery (UA) dopplers should be performed weekly starting at the time of diagnosis. Dopplers could be performed every 1-2 weeks per MFM recommendation with NSTs done on the weeks when dopplers aren't performed.
    a. Dopplers may be done more frequently (a few times a week if there is absent end diastolic flow).
    b. If there is reverse end diastolic flow, the patient should be admitted to L&D for fetal monitoring, steroids, delivery, and consult or transfer to MFM, depending on gestational age and clinical scenario. Discuss plans with MFM and FMOB/MCH Fellow.
6. NSTs should be performed weekly after viability and twice weekly if abnormal dopplers or other risk factors/comorbidities.
7. **Timing of Delivery**: Delivery timing depends on the severity of FGR, interval growth, UA dopplers, MVP, and fetal surveillance results. Consult with MFM and/or FMOB regarding timing of delivery.
    a. Induction recommended at 37 weeks if EFW or AC < 3% or elevated UA dopplers are present to prevent stillbirths.
    b. Induction recommended between 38 0/7 and 39 0-7 with EFW or AC > 3% but < 10%and normal UA dopplers.


Diagnosis
EFW < 10th %ile
and / or
AC < 10th %ile
Classification
Early FGR: < 32 weeks at initial diagnosis
Late FGR: ≥ 32 weeks at initial diagnosis
Severe FGR: EFW < 3rd %ile
Work-up
Detailed obstetrical ultrasound (76811)
Diagnostic genetic testing (CMA) for:
Early-onset FGR
Sonographic abnormalities
Polyhydramnios
PCR CMV on amniotic fluid if patient has amniocentesis
Fetal Surveillance
UA Doppler
CTG
Deliver for repetitive late decelerations after fetal viability
Normal UA:
S/D, PI, RI ≤ 95%
UA Decreased EDV:
S/D, PI, RI > 95%
UA Doppler weekly
CTG 1-2x per week
Consider EFW q 2 weeks
Deliver at 37 weeks
UA Absent EDV:
Consider inpatient admission
UA Doppler 2-3x per week
Corticosteroids for FLM
CTG 2x per week if managed as outpatient
Consider EFW q 2 weeks
Deliver at 33-34 weeks
UA Reversed EDV:
Inpatient admission
Corticosteroids for FLM
CTG 1-2x per day
Consider EFW q 2 weeks
Deliver at 30-32 weeks
EFW ≥ 3rd - 9th %ile
UA Doppler q 1-2 weeks for 1-2 weeks. If stable findings,
UA Doppler q 2-4 weeks
CTG 1x per week
EFW q 3-4 weeks
Deliver at 38-39 weeks
EFW < 3rd %ile
UA Doppler weekly
CTG 1x per week
Consider EFW q 2 weeks
Deliver at 37 weeks

AC, abdominal circumference; *CMA*, chromosomal microarray analysis; *CMV*, cytomegalovirus; *CTG*, cardiotocography; *EDV*, end-diastolic velocity; *EFW*, estimated fetal weight; *FGR*, fetal growth restriction; *FLM*, fetal lung maturity; *PCR*, polymerase chain reaction; *PI*, pulsatility index; *RI*, resistance index; *S/D*, systolic-to-diastolic ratio; *UA*, umbilical artery.
Society for Maternal-Fetal Medicine. SMFM Consult Series #52: Diagnosis and management of fetal growth restriction. Am J Obstet Gynecol 2020

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XLIV. INTRAPARTUM FETAL MONITORING

A. 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.

-The fetal heart rate and pattern is recommended to be monitored in all patients in labor. The monitoring may be continuous monitoring or intermittent monitoring at specific intervals or a combination of each.
-Patients with preeclampsia, FGR, diabetes, chronic hypertension, oxytocin augmentation, and other higher risk pregnancies are highly recommended to have continuous monitoring.

B. Periodic auscultation with a fetoscope or doppler 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 recommended.

C. At UNM, all patients in labor 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 low-risk labor.

D. Protocol for Intermittent Fetal Heart Rate Monitoring Please see SOP on intermittent auscultation
http://unmobgyn.pbworks.com/w/file/fetch/131163576/Intermittent%20Auscultation%20Guideline%20%282%29.pdf

1. Candidates for IM are 36 weeks or >, cephalic, singleton gestation and have a 20 minutes Category 1 FHT in OBT or L&D
2. Contraindications are HTN disorders, GDMA2 or DM, Cholestasis, TOLAC, h/o IUFD, FGR, polyhydramnios, multiple gestation, preterm, > 41 completed weeks, major anomalies, epidural anesthesia, oxytocin administration, moderate to thick meconium, Triple I, vaginal bleeding
3. Assess uterine contractions by palpation, verify maternal pulse, count FHR through uterine contraction and for 60 seconds immediately afterwards
4. Latent phase: listen q 1 hr, Active phase: q 15-30 min, Second stage q 15 min and q 5 min while pushing
5. Listen before AROM or administration of analgesia. Listen after SVE, AROM or SROM, administration of analgesia
6. Discontinue if baseline < 110 or > 160, audible decels, abnormal rhythm, presence of contraindications, difficult distinguishing between maternal HR and FHR

7. Document baseline FHR, presence or absence of audible increases (accels), presence or absence of audible decreases (decels), HR of pregnant patient, uterine contraction frequency, duration, intensity, and palpable fetal movement

E. Continuous monitoring should be used in the high-risk patient or in the presence of abnormal fetal heart patterns during intermittent monitoring.

F. As long as monitoring of the fetal heart rate occurs frequently enough with external monitoring, 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.

G. Any abnormalities detected on fetal heart monitoring should be recorded on the labor progress note and promptly reported to the attending physician.

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.

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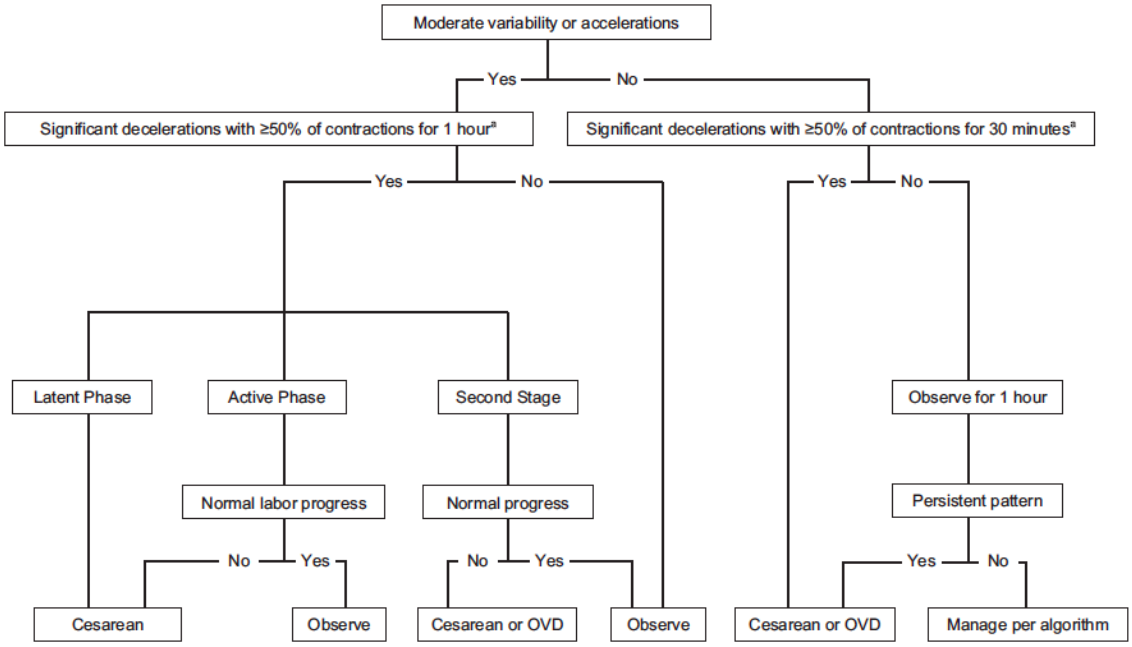
From Algorithm for Management of Category II Fetal Heart Rate Tracings AJOG 2013

FIGURE 1

Algorithm for management of category II fetal heart rate tracings



OVD, operative vaginal delivery.

[a]That 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

1. Variability refers to predominant baseline FHR pattern (marked, moderate, minimal, absent) during a 30-minute evaluation period, as defined by NICHD.
2. Marked variability is considered same as moderate variability for purposes of this algorithm.
3. 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.
4. 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).
5. Once a category II FHR pattern is identified, FHR is evaluated and algorithm applied every 30 minutes.
6. Any significant change in FHR parameters should result in reapplication of algorithm.
7. 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.
8. 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 reinstituted if category I pattern again reverts to category II.
9. 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.
10. 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.

XLV. CORD ARTERIAL BLOOD GASSES

A. Cord blood gasses do not affect clinical decision-making; however, they are of benefit for demonstrating whether intrapartum acidosis/asphyxia was associated with a baby's persistent low Apgar scores. This information is useful for the NICU in helping to decide whether an infant should be cooled. 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. There is an L&D procedure regarding collection of blood gasses that is pasted below.

Perform umbilical artery blood acid-base analysis after every delivery in which a fetal metabolic abnormality is suspected. The following are examples of when umbilical artery acid-base analysis should be performed:

1. MFM patient deliveries
2. Emergent cesarean delivery
3. Cases where NICU is called to delivery and team does an evaluation/resuscitation
4. Low Apgar scores <7 at 5 or 10 minutes
5. Category III FHR pattern
6. Maternal intrapartum fever
7. Placental abruption
8. Uterine rupture
9. Umbilical cord prolapse
10. Low birth weight (< 2500 grams)
11. FGR
12. Vaginal breech delivery
13. Preterm delivery (35 6/7 weeks and less)
14. Concerning category II FHR pattern
15. Multiple gestation

C. **It is reasonable to set aside a doubly clamped cord** segment for availability for Umbilical Cord (UC) gas analyses for ***all deliveries*** so that it is available if needed.

D. **Technique**

For immediate umbilical cord gas analysis:

1. Doubly clamp segment of umbilical cord after delivery and put on ice as soon as possible.*
2. The optimal length may depend on the quality and caliber of the cord. Generally, the minimum length is 10cm with a maximum length needed of 20cm.
3. Sample the umbilical artery, although 'paired' venous sample is recommended (the 2 umbilical arteries are smaller than the vein and either can be sampled)
4. Use heparin flushed 1 to 2 ml syringe.
5. Syringes should be transported on ice to the lab within 60 minutes.

Set-aside cord gas analyses:

1. Doubly clamp a 10 to 20 cm segment of umbilical and put on ice.
2. Sample the umbilical artery, although 'paired' venous sample is recommended
3. Use heparin flushed 1 to 2 ml syringe
4. Sample and transport to the lab for determination within 20 minutes after birth if at room *temperature.*

*IMPORTANT

- The sample for cord gas analysis may be transported to the lab for determinations within 60 minutes after birth *if on ice*.
- An *estimate* of umbilical cord pH and base deficit may be done from a sample obtained from a doubly clamped segment of cord *at room temperature* between 20 minutes and 90 minutes since birth.
- Cord pH falls 0.05 at 30 minutes, 0.087 at 60 minutes and 0.112 at 90 minutes after birth.

A note on normal values:

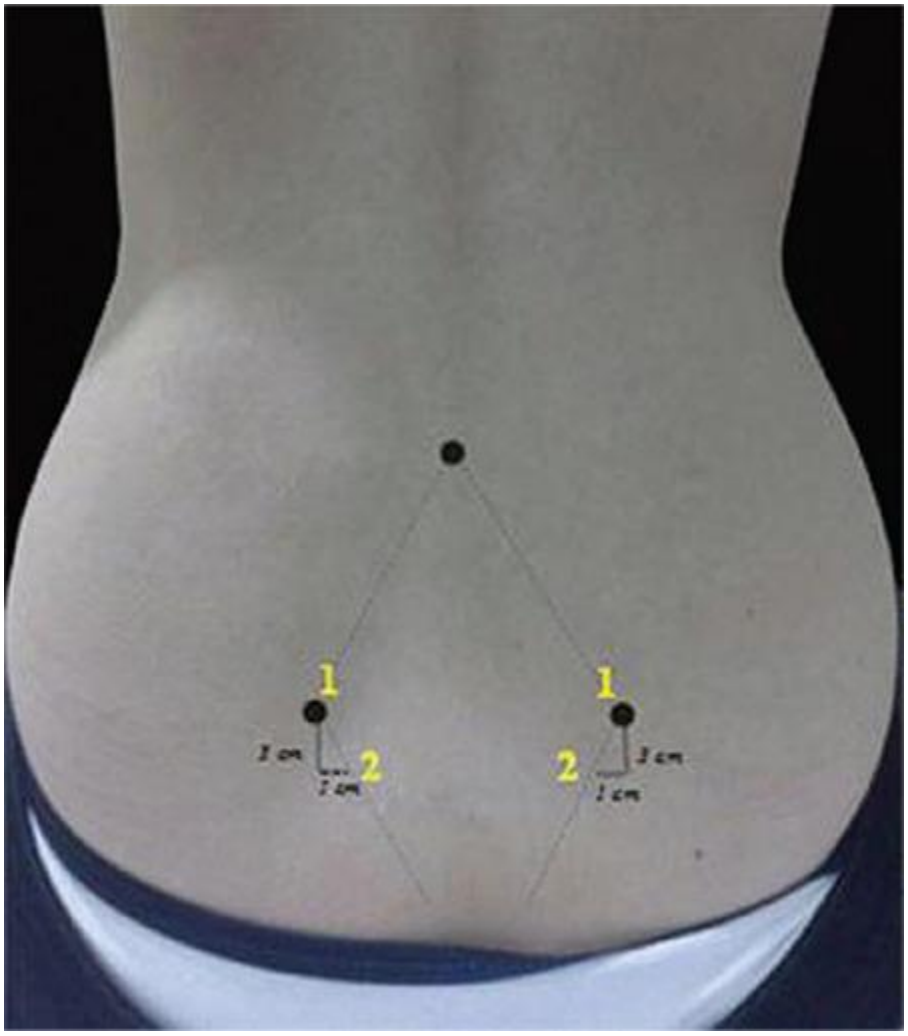
- Mean pH for preterm infants is 7.28 and mean pH for term infants is 7.27.
- The most useful interpretation of fetal-newborn condition and prognosis are based on *both* the pH and base excess (or deficit).
- A pH <7.00 is a practical threshold for defining pathologic fetal acidemia.
- A base deficit greater ≥12 mmol/L suggests metabolic acidosis and is associated with an increased risk of moderate or severe newborn complications.

XLVI. OB ANALGESIA

A. Adequate labor support and preparation for childbirth are essential for helping with labor pain. Nonpharmacologic 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 nonpharmacologic coping methods, nitrous, fentanyl, or epidural analgesia should ideally be discussed first during their prenatal visits. All patients should be told about the option of labor pain analgesics and/or non-pharmacologic methods. ACOG states that the 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 (0-15 mg IM) in latent labor
   2. IV fentanyl can be given in 50-100 mcg IV boluses q 30-60min. up to 150 mcg/hr. May be reversed by Narcan.
   3. Epidural analgesia

4. Intrathecal analgesia
5. Nitrous Oxide
6. Sterile Water injections (SWI)
    a. Application of sterile water injections is a simple, and cost effective technique for relieving back pain in the first stage of labor particularly in low resource settings or for those wishing to avoid pharmacological analgesia.

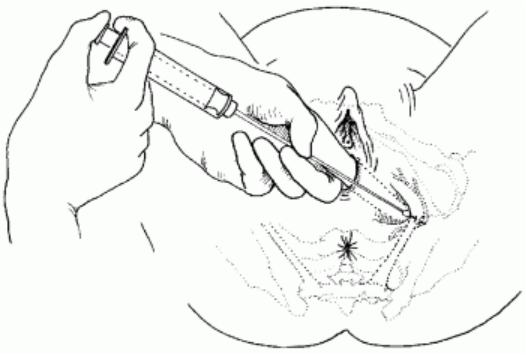


Localization and application of injections. It demonstrates the rhombus of Michaelis region and location of injections. The rhombus of Michaelis region is the region in the shape of an equilateral quadrangle, which is located among posterior superior iliac spines, gluteal muscles, and spinous process of vertebra L4; 3 cm lower and 1 cm medial from superior iliac spines and spines were marked. Injections were given to both groups simultaneously and at the peak point of contractions by two midwives.

[Effects of Intradermal Sterile Water Injections in Women with Low Back Pain in Labor: A Randomized, Controlled, Clinical Trial - PMC]

7. 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 is 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 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 patient can suffer convulsions and death if IV injection of lidocaine occurs.
- Inject 5 mL of 1% lidocaine solution. Can buffer with sodium bicarb 10:1. Remember that the total dose should not exceed 3 mg/kg (i.e.: 21cc [of 1%lido 10mg/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 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 patient can feel the pinch**, wait 2 more minutes and then retest.

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

A. Prenatal Care

1. Discuss all alternatives to tubal ligation including the use of the LARCs.
2. Have **federal sterilization consent** 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 the consent does not mean BTL will be performed, but gives the option of BTL if desired.
   Sterilization Consent English
   Sterilization Consent Spanish
3. Make three copies of tubal consents: a copy for clinic chart, a copy for patient to carry, and a copy to go to L&D along with the prenatal records or to be scanned into Powerchart if at a UNM clinic.
4. Patients with morbid obesity (BMI >40 to 45 depending on habitus) may not be good candidates for postpartum BTL and should be counseled on other LARC methods. They may be able to have a postpartum BTL depending on body habitus and should be assessed by a surgeon postpartum. 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. They should still sign federal consents in case they have a cesarean section.
5. Patients with a history of umbilical hernia repair with mesh are not candidates for immediate postpartum BTL if the mesh is in the infra-umbilical region.
6. An operative report should be obtained for any patient who has had prior tubal surgery such as a salpingostomy or salpingectomy for an ectopic pregnancy.
7. Patients without insurance coverage will be charged up to ~$3000 for the procedure if done after a vaginal delivery and should be counseled about this cost in prenatal care to decide if they would like to pursue another option. Vasectomy is ~$500.
8. An alternative to BTL is salpingectomy and patients should be advised that this may be recommended to reduce the risk of ovarian cancer. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2019/04/opportunistic-salpingectomy-as-a-strategy-for-epithelial-ovarian-cancer-prevention#:~:text=Opportunistic%20salpingectomy%20is%20the%20removal,pelvic%20surgery%20for%20another%20indication.

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 a copy of the tubal ligation federal consent paper and place it on the chart.
3. ADD to the electronic L&D board. This will make the OB/GYN team, anesthesiologist, and charge RN aware of BTL.
4. Call MCH Fellow so that they are aware of BTL, they can get consent from the patient, and decide if they are an appropriate candidate.
5. Pre-op evaluation includes knowledge of the delivery, medical problems, surgical history, BMI, history of ectopic pregnancy or PID, medicines and drug allergies.

C. After delivery
1. If an epidural is in place the patient may consider doing PP BTL 2-4 hours after delivery and staying on L&D until the surgery (need to be NPO) after discussing timing of the case with the charge RN.
2. The MCH fellow will write orders for NPO status since they will know the timing of surgery.
3. Postpartum Hct should be ordered.
4. The MCH fellow should write the pre-op note (=obpptlpreopnote*) and sign the surgical consent prior to 7 am the day of the procedure to expedite going to the OR in a timely fashion.
5. The fellow should attend the pre-op huddle at 7:15 am.

D. After tubal ligation
1. The MCH fellow will write a brief operative note in chart, complete pathology form and place pathology order in Powerchart, dictate operative note, and write post-op orders including oxycodone for pain management.
2. The patient may be discharged home as soon as 4 hours post-op if they are doing well and the infant is at least 24 hours old. If discharged to home on the day of tubal ligation, the resident needs to see the patient prior to discharge. Patients should be discharged with a prescription for oxycodone.

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XLVIII. POSTPARTUM CONTRACEPTION

All patients should be counseled on postpartum contraception. Ideally, this should be done in prenatal care, but if not, counseling should be done prior to hospital postpartum discharge. This counseling should be done in a non-coercive manner that supports autonomy.

A. Immediate Postpartum LARC
   1. Patients with Medicaid are eligible for immediate postpartum IUDs and Nexplanons. Counseling regarding this option during prenatal care is recommended. This may be a good option for those interested in an IUD or Nexplanon, but who may not return for a postpartum visit. At UNM, patients can sign a consent in clinic up to 30 days prior to the birth which can be scanned into the EMR.
   2. Patients 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.
   3. At UNM, patients with private insurance are generally not reimbursed at this time for immediate postpartum LARC placement so it should be recommended to have LARC placement at the postpartum visit. There are often studies at UNM being conducted on postpartum contraception that may provide patients options at no cost, so discussed with MCH faculty if patients are interested in a method but cost is an issue.

B. Hormonal Contraception and Postpartum LARC (not immediate)
   1. Depo-provera may be given in the hospital prior to discharge if desired.
   2. Progesterone-only pills can be prescribed to start immediately postpartum or for breastfeeding patients who are concerned about a theoretical decrease in milk supply they can be delayed until 4 weeks postpartum (although okay to start immediately).
   3. Combined oral contraceptives (COC) containing estrogen should not be started until at least 3 weeks postpartum,because of increased risk of VTE in the postpartum period. They are not recommended in patients with an increased risk of VTE and in some chronic medical conditions.
   4. LARCS can be placed any time postpartum.
   5. Here's a link to general contraceptive advice from the CDC. https://www.cdc.gov/reproductivehealth/contraception/pdf/summary-chart-us-medical-eligibility-criteria_508tagged.pdf

Condition	Qualifier for condition	Estrogen/ progestin: pill, patch, ring	Progestin-only: pill	Progestin-only: injection	Progestin-only: implant	Progestin IUD	Copper IUD
Postpartum, not breastfeeding	< 3 weeks postpartum	4	1	1	1	See Postpartum IUDs	
	3-6 weeks, increased risk DVT	3	1	1	1		
	3-6 weeks, normal risk DVT	2	1	1	1		
	> 6 weeks postpartum	1	1	1	1	1	1
Postpartum, & breastfeeding	< 3 weeks postpartum	4	2	2	2	See Postpartum IUDs	
	3-4 weeks postpartum	3	2	2	2		
	4-6 weeks, increased risk DVT	3	1	1	1		
	4-6 weeks, normal risk DVT	2	1	1	1		
	> 6 weeks postpartum	2	1	1	1	1	1
Postpartum IUDs	< 10 minutes post-placenta delivery-Breastfeeding					2	1
	< 10 minutes post-placenta delivery-not breastfeeding					1	1
	10 minutes post-placenta delivery to 4 weeks					2	2
	> 4 weeks					1	1

Risk Level	
1	Method can be used without restriction
2	Advantages generally outweigh theoretical or proven risks
3	Method not usually recommended unless other, more appropriate methods are not available or not acceptable
4	Method not to be used

From the Reproductive Access Project MEC Chart
https://www.reproductiveaccess.org/wp-content/uploads/2014/12/chart.pdf

XLIX. MANAGEMENT OF DEPRESSION IN PREGNANCY AND POSTPARTUM

A. Depression in Pregnancy

1. More common than when not pregnant.
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 the first trimester. Other SSRIs 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 the short term.
   - NICU admit for jitteriness, respiratory difficulties
8. Fluoxetine is most studied in pregnancy and sertraline next. Consider changing to sertraline at 36 weeks as it may have lower incidence and length of serotonin syndrome and sertraline is SSRI of choice for breast/chestfeeding.
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. Patients typically get worse without treatment.
4. Detection challenges
   Depression overlaps with normal postpartum symptoms, extreme social pressure to be a happy, hard to admit problem; providers want to reassure and bolster patient's confidence.

5. Screening
    - Helps detect considerably more disease.
    - Edinburgh Postnatal Depression Scale is a 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 patients as most studied.
    - May consider weaning or switching to shorter acting SSRI in the late 3rd trimester based on severity of depression syndrome and prior history. Conversely some patients 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**

"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
   - 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

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L. INTRAAMNIOTIC INFECTION (TRIPLE I AKA CHORIOAMNIONITIS)

This is copied from the L&D Triple I SOP*****

B. Triple I affects 2-5% of term births. It is usually an ascending polymicrobial infection. Neonatal risks include pneumonia, meningitis, sepsis and death. Maternal morbidity includes a dysfunctional labor pattern with arrest of labor, atony causing postpartum hemorrhage, endometritis, sepsis, ARDS, and rarely death.
C. Triple I alone **is not an indication** for c-section delivery.
D. Risk Factors
   i. Longer length of labor and length of ruptured membranes
   ii. Multiple digital vaginal examinations (especially with ruptured membranes)
   iii. An increasing number of digital examinations may be a consequence of longer labor rather than an independent risk factor, particularly prior to membrane rupture.
   iv. Cervical insufficiency, nulliparity, meconium-stained amniotic fluid, internal fetal or uterine monitoring, presence of genital tract pathogens (e.g., STIs, GBS, BV), alcohol and tobacco use, and previous history of intra-amniotic infection
   v. Maternal chronic disease, maternal nutritional status, and emotional stress (may increase susceptibility to infection by effects on immune system)
E. Triple I Presentation:
   i. Most commonly with PROM, but can occur with intact membranes. Key clinical findings include:
      1. Fever
      2. Leukocytosis (variously defined as white blood cell count 12,000/mm3 or > 15,000/mm3)
      3. Tachycardia> 100/min
      4. Fetal tachycardia> 160/min
      5. Uterine tenderness
      6. Bacteremia (most common when associated with GBS or E coli infection)
      7. Purulent or malodorous amniotic fluid.
      8. Risk factors include prolonged labor and prolonged ROM which can lead to increased digital exams, use of internal monitors, GBS, and STIs.

F. Presumptive Diagnosis:
   i. **Isolated fever** is temperature ≥ 39.0° C on one occasion OR
   ≥ 38.0 °C but <39.0 °C on two occasions 30 minutes apart without a clear alternate source. Treat empirically for Triple I in the case of isolated maternal fever. *ACOG considers an isolated maternal fever a temperature between 38.0-38.9°C. and a*

temperature of 39°C with no other obvious source to be a suspected Triple I since markedly elevated temps are usually due to infection, while transient lower temps may be spurious, related to dehydration or epidural analgesia, or may represent true infection.

ii. **Suspected Triple I**: While the use of antibiotics should be initiated with isolated fever, the suspected diagnosis of Triple I relies on fever (temperature ≥ 39.0° C on one occasion **OR** ≥38.0 °C but <39.0 °C on two occasions 30 minutes apart without a clear source) **in addition to** one of the following:
    1. Fetal tachycardia >160 for ≥ 10 minutes (excluding accelerations, decelerations, or periods of marked variability)
    2. White cell count >15,000 in the absence of corticosteroids.
    3. Purulent-appearing fluid coming from the cervical os
    4. Note – these criteria de-emphasize
    5. tachycardia and fundal tenderness for clinical diagnosis

iii. **Confirmed Triple I**: Diagnosis can be confirmed with amniotic fluid lab findings which are rarely obtained or postpartum from placental pathology. The definitive dx is important for research or clinical case reviews, but doesn't affect patient management.

G. **Management**: For those with isolated fever, suspected and/or confirmed triple I, broad spectrum antibiotics during labor are recommended . These can be ordered from the Triple I power plan order set:

i. **Vaginal delivery**:
    1. Ampicillin 2 mg IV q 6 hr
    2. Gentamicin 5 mg/kg once a day

ii. Ampicillin is preferred over PCN for Triple I, thus GBS+ patients receiving PCN should be switched to ampicillin.

iii. For those with a PCN allergy:
    1. Cefazolin 2 g IV q 8 hr if mild allergy (no h/o anaphylaxis, hives, or angioedema)
    2. Clindamycin 900 mg IV q 8 hr or Vancomycin 1 g IV q 12 hr if severe (anaphylactic) PCN allergy
    3. Vancomycin should be used for GBS resistant to clindamycin or erythromycin or GBS without sensitivities available.

iv. Continuous fetal monitor

v. Consider IUPC prn and possible oxytocin augmentation as needed to expedite birth

vi. Begin acetaminophen (Tylenol) immediately after diagnosis to reduce fever in pregnant/postpartum patient
    1. 1000 mg po q 6 hr, max dose 3000 mg daily
    2. 650 mg rectal q 4-6 hours, max daily dose 3900 mg daily

vii. Have peds/NICU team at delivery for resuscitation

viii. Consider sending placenta to pathology

ix. Following vaginal delivery, no additional doses of antibiotics are indicated
x. Following cesarean delivery
    1. Continue antibiotics for at least one additional dose, may continue for 24 hours antibiotics post delivery or longer if concerned for endometritis. If persistent postpartum fever and/or pelvic pain – contact MCH Fellow/FMOB
    2. Add Clindamycin 900 mg IV q 8 hours or metronidazole 500 mg IV q 8 hours for anaerobic coverage
    3. Azithromycin does NOT need to be given intraoperatively or added to postpartum orders sine broad spectrum coverage already achieved
    4. Since gentamicin is given as a daily dose, if more than 12 hours from time of delivery have passed since the last dose of gentamicin, an additional dose of gentamicin should be given postpartum at the appropriate 24 hour time frame
    5. If gentamicin has been given < 12 hours from time of delivery, then an additional dose of gentamicin is not needed.

From Higgins 2016 Evaluation and Management of Women and Newborns with a Maternal Dx of Chorioamnionitis

Table 1. Recommended Antibiotic Regimens for Treatment of Intraamniotic Infection ⇦

Primary Regimen	
Recommended Antibiotics	**Dosage**
• Ampicillin *and* • Gentamicin	2 g IV every 6 hours 2 mg/kg IV load followed by 1.5 mg/kg every 8 hours *or* 5 mg/kg IV every 24 hours
Recommended Antibiotics (Mild Penicillin Allergy)	**Dosage**
• Cefazolin *and* • Gentamicin	2 g IV every 8 hours 2 mg/kg IV load followed by 1.5 mg/kg every 8 hours *or* 5 mg/kg IV every 24 hours
Recommended Antibiotics (Severe Penicillin Allergy)	**Dosage**
• Clindamycin *or* • Vancomycin* *and* • Gentamicin	900 mg IV every 8 hours 1 g IV every 12 hours 2 mg/kg IV load followed by 1.5 mg/kg every 8 hours *or* 5 mg/kg IV every 24 hours
Postcesarean delivery: One additional dose of the chosen regimen is indicated. Add clindamycin 900 mg IV or metronidazole 500 mg IV for at least one additional dose. *Postvaginal delivery*: No additional doses required; but if given, clindamycin is not indicated.	
Alternative Regimens	
• Ampicillin–sulbactam • Piperacillin–tazobactam • Cefotetan • Cefoxitin • Ertapenem	3 g IV every 6 hrs 3.375 g IV every 6 hrs or 4.5 g IV every 8 hrs 2 g IV every 12 hrs 2 g IV every 8 hrs 1 g IV every 24 hrs
Postcesarean delivery: One additional dose of the chosen regimen is indicated. Additional clindamycin is not required. *Postvaginal delivery*: No additional doses required, but if given, clindamycin is not indicated.	

Please see the following articles on the wiki for background information.

- ACOG Committee Opinion Aug 2017 Intrapartum Management of Triple I
- Evaluation and Management of Women and Newborns with a Maternal Diagnosis of Chorioamnionitis.

Cesarean Section antibiotic prophylaxis:

1. In patients that are having non elective cesarean who are laboring and/or have ruptured membranes, Azithromycin may be useful in reducing the risk of endometritis. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5131636/pdf/nihms-825225.pdf
2. For patients with a BMI over 30, many providers will place them on oral antibiotics until discharge to reduce surgical wound infection risk. https://oce-ovid-com.libproxy.unm.edu/article/00006254-201802000-00008/PDF

LI. EVALUATION OF NEONATAL SEPSIS RISK

********This is copied from the MBU/ICN SOP for Evaluation of Neonatal Sepsis Risk *******
https://UNMH.policymedical.net/policymed/anonymous/docViewer?stoken=9d908eb3-db2a-424b-8c92-349690a4159d&dtoken=a3205109-dae9-4e88-8059-90c55c547617

A. Any infant's (≥35 week's gestation) sepsis risk can be calculated with the neonatal sepsis calculator. https://neonatalsepsiscalculator.kaiserpermanente.org/
B. Infants with the following conditions ***will be*** evaluated by using the neonatal sepsis calculator to guide clinical care ***and*** vital signs will be taken every 4 hours for the first 12 hours of life (regardless of sepsis calculator recommendations).
    a. Patients who have/are:
        i. GBS+ or GBS unknown
        ii. Suspected Triple I (formerly referred to as chorioamnionitis)
        iii. Prolonged rupture of membranes (ROM) greater than 24 hours
        iv. Isolated fever within 2 hours after delivery (temperature ≥ 39.0°C on one occasion **OR** ≥38.0°C but <39.0°C on two occasions 30 minutes apart without a clear source).
        v. No prenatal care or infant born outside of hospital
    b. Infants who are born at 35 to 36 6/7 weeks gestation
C. Go to: https://neonatalsepsiscalculator.kaiserpermanente.org/
    a. Set incidence of Early-Onset Sepsis (first drop down tab) to **CDC national incidence of 0.5/1,000 births**
    b. Other values in calculator filled out by LIP or nurse according to history
        i. **Note**: if ROM length unknown, use 24 hours as the value
    c. Intrapartum Antibiotics defined as:
        i. GBS-specific antibiotic prophylaxis*: Penicillin, ampicillin, erythromycin, cefazolin
        ii. Broad spectrum: Other cephalosporins (other than cefazolin), fluoroquinolones, extended spectrum beta-lactam, any intrapartum antibiotic prophylaxis + an aminoglycoside
        iii. ***Note:** Infants of GBS+ patients who received **vancomycin or clindamycin** should be considered to have had **NO** antibiotics for use in the sepsis calculator (as this is not considered adequate treatment).
D. After all values are filled in, click ***Calculate*** to obtain Early-Onset Sepsis Risk at Birth and after Clinical Exam
E. Clinical Recommendations depend on infant's Clinical Exam
F. Definitions for Clinical Exam (*links also provided on sepsis calculator webpage*)
    a. Well Appearing- No persistent physiologic abnormalities

b. Equivocal-
    i. Persistent physiologic abnormality ≥ 4 hrs
        1. Tachycardia (HR ≥ 160)
        2. Tachypnea (RR ≥ 60)
        3. Temperature instability (≥ 100.4˚F or < 97.5˚F) (≥38°C or <36.4°C)
        4. Respiratory distress (grunting, flaring, or retracting) not requiring supplemental O_2

    ii. Two or more physiologic abnormalities lasting for ≥ 2 hrs
        1. Tachycardia (HR ≥ 160)
        2. Tachypnea (RR ≥ 60)
        3. Temperature instability (≥ 100.4˚F or < 97.5˚F) (≥38°C or <36.4°C)
        4. Respiratory distress (grunting, flaring, or retracting) not requiring supplemental O_2

c. Clinical Illness
    i. Persistent need for Nasal Continuous Positive Airway Pressure (NCPAP) / High Flow Nasal Cannula (HFNC) / mechanical ventilation (outside of the delivery room)
    ii. Hemodynamic instability requiring vasoactive drugs
    iii. Neonatal encephalopathy /Perinatal depression
        1. Seizure
        2. Apgar Score at 5 minutes < 5
    iv. Need for supplemental O_2 ≥ 2 hours to maintain oxygen saturations > 90% (outside of the delivery room)

G. Abnormal vital signs or any of the above symptoms of equivocal exam or clinical illness will be reported
H. When the sepsis calculator recommends Blood Culture or Antibiotics, **both** a Blood Culture and a Complete Blood Count with Differential (CBC with diff) will be drawn prior to antibiotic administration.
I. Antibiotic Dosing
    a. Ampicillin
        i. 50 mg/kg/dose IM Q 8 hours (MBU/WSCU/NBN)
        ii. 100mg/k/dose IV Q 12 hours (ICN-3)
    b. Gentamicin
        i. 4 mg/kg/dose IM Q 24 hours (MBU/WSCU/NBN, ≥ to 35 weeks gestational age)
        ii. 4 mg/kg/dose IV Q 24 hours (ICN-3, ≥ to 35 weeks gestational age)
J. Observation for 48 hours is ***required*** for infants when labor course was complicated by::
    a. GBS+ with inadequate treatment
    b. Suspected or confirmed Triple I
    c. GBS unknown **AND** either one of the following additional risk factors:
        i. <37 weeks gestation
        ii. >18 hours ROM

K. Observation for 48 hours is ***recommended*** for infants when labor course was complicated by::
    a. GBS+ with adequate treatment
    b. Isolated temperature as defined above

L. This neonatal sepsis calculator should be used for ongoing evaluation of any newborn infant (≥35 week's gestation) with an equivocal exam or clinical illness. (i.e. A well-appearing infant may become equivocal when vitals are repeated in 4 hours. At this time, the sepsis calculator should be used again to determine recommendations for treatment).

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LII. HYPERBILIRUBINEMIA IN THE TERM INFANT

A. This guideline refers to infants ≥ 36 weeks gestation. See hyperbilirubinemia article on wiki for further details.

B. Goal of treatment is to prevent central nervous system toxicity. hyperbilirubinemia article

C. Risk factors
1. Gestational parent
    - Rh
    - ABO incompatibility
    - Breast/chestfeeding
    - Ethnicity - Asian, Native American
    - Diabetes
2. Neonatal
    - Prematurity
    - Macrosomia
    - Trauma - hematomas, bruising
    - Genetics - sibling with hyperbilirubinemia
    - Excessive wt loss & infrequent feedings
    - Infections -TORCH
    - Drugs
    - G6PD

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). As jaundice progresses it usually travels from face to trunk.
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.Bilitool application uses this nomogram and is a useful tool.
   - Decline 1-2 mg/dl in 4-6 hrs is expected
   - Contraindication: Conjugated hyperbilirubinemia- Bronze baby
   - Cautions
     - Burns, retinal damage, temperature regulation
     - Dehydration, rash, tanning
     - Separation of infant & parents
   - **Phototherapy can usually be stopped if 3 points below light level.** . Rebound hyperbilirubinemia is uncommon and it is not necessary to check a rebound level prior to discharge. If it needs to be checked it will be recommended by Bili Tool (https://bilitool.org/). Another option people use is Pedi Tools (https://peditools.org/).
   -
2. Exchange transfusion or IVIG
     - Hemolytic disease, severe anemia
     - Rise of >1 mg/dl per hour in 6 hours

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LIII. NEONATAL HYPOGLYCEMIA

This is copied from the Neonatal Hypoglycemia Protocol.

This procedure is for screening of at-risk newborns for asymptomatic hypoglycemia. At-risk newborns include infants of diabetic mothers (IDM), late preterm (LPT, infants born between the ages of 34 and 36 6/7 weeks), small for gestational age (SGA), low birth weight (LBW, < 2500 g), and large for gestational age (LGA) newborns. Additionally, newborns who have not fed in > 5 hours and infants with signs or symptoms of hypoglycemia will be checked for hypoglycemia. This algorithm is meant only for well-appearing, asymptomatic infants and should not be used if an infant appears sick. Additionally, this screening procedure does not apply to patients who are already or were previously receiving IV dextrose.

Signs and symptoms of hypoglycemia may include irritability, tremors, jitteriness, exaggerated Moro reflex, high-pitched cry, seizures, lethargy, floppiness, cyanosis, apnea, and poor feeding. If any of these occur, a blood glucose (BG) should be obtained and the licensed independent provider notified for further management.

During the first 24-48 hours of life, newborns' plasma glucose levels are lower than later in life as they transition from intrauterine to extrauterine life. What constitutes hypoglycemia during the first 2 days of life is controversial with most experts using levels between 40 mg/dL and 47 mg/dL as the threshold for normal after the 1st 4 hours of life. Recent articles suggest transient hypoglycemia may adversely affect neurodevelopment. For this reason, monitoring glucose in at-risk newborns, promptly treating hypoglycemia, and transferring newborns with persistent hypoglycemia to the Newborn Intensive Care Unit (NICU) or Intermediate Care Nursery (ICN) for more aggressive treatment is imperative.

GUIDELINE STEPS

1. "At risk" newborns who Require Screening
   - 1.1. Late Preterm (LPT): 34-36 6/7 gestational weeks based on </= 20 week prenatal US or, if not available, Ballard
   - 1.2. Small for Gestational Age (SGA) or LBW: birth weight <10% for gestational age or <2500 grams
   - 1.3. Infant of a Diabetic Mother (IDM)
   - 1.4. Large for Gestational Age (LGA): birth weight >90% for gestational age

2. Determination of newborns who are "at risk" and responsibility for 1st blood glucose (BG) check
   - 2.1. If a newborn appears small or large at time of birth, an L&D nurse will weigh the newborn at ~60 minutes of life.
   - 2.2. If gestational age is unknown or prenatal US was performed at >20 weeks gestation, NICU (if present) or a Newborn Nursery (NBN) or Mother Baby Unit (MBU) nurse will perform Ballard to determine gestational age.

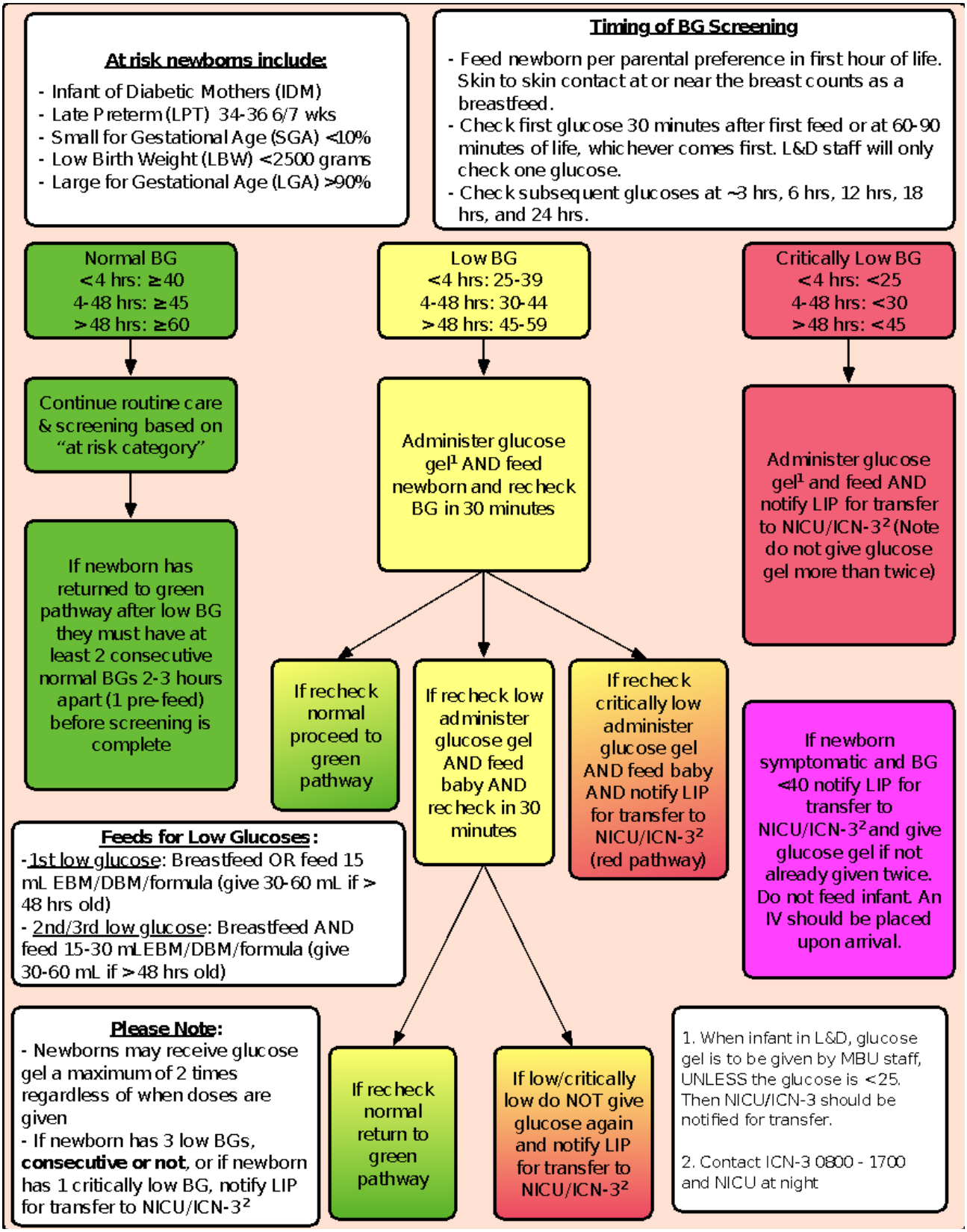
3. Prevention of Hypoglycemia
   3.1. All at risk newborns should feed within one hour of delivery. For breast/chestfeeding newborns, skin-to-skin contact near the breast/chest is recognized as the first feed even if the baby does not latch. Formula fed newborns should be offered 5-15 ml of formula for first feed.
   3.2. Encourage skin to skin contact, keep a dry hat on baby for 1st 24 hours of life, wrap in warm dry blankets when not skin to skin, and delay bath until glucose screening is complete.
   3.3. When possible, check BG while the baby is skin to skin, breastfeeding, or sucking on a finger.

4. Timing of Screening
   4.1. First BG check will take place 30 minutes after initial feed OR at 60-90 minutes of life, whichever comes first.
   4.2. Do not delay the first BG check beyond 90 minutes even if the baby has not yet fed.
   4.3. After the initial BG check, at-risk newborns will be screened, preferably pre-feed, at ~ 3, 6, 12, 18, and 24 hours of life.
   4.4. Babies who have had a **low BG at any point** during screening must have **at least 2 consecutive normal BG's** before screening can be considered complete. These BG checks should be done 2-3 hours apart and at least **one must be pre-feed**.

5. BG values for newborns
   See chart below

https://UNMH.policymedical.net/policymed/anonymous/docViewer?stoken=9d908eb3-db2a-424b-8c92-349690a4159d&dtoken=b2e36277-a866-47b0-9036-30716f2fcb9b

BLOOD GLUCOSE SCREENING FLOW SHEET FOR AT-RISK NEWBORNS


At risk newborns include:
- Infant of Diabetic Mothers (IDM)
- Late Preterm (LPT) 34-36 6/7 wks
- Small for Gestational Age (SGA) <10%
- Low Birth Weight (LBW) <2500 grams
- Large for Gestational Age (LGA) >90%
Timing of BG Screening
- Feed newborn per parental preference in first hour of life. Skin to skin contact at or near the breast counts as a breastfeed.
- Check first glucose 30 minutes after first feed or at 60-90 minutes of life, whichever comes first. L&D staff will only check one glucose.
- Check subsequent glucoses at ~3 hrs, 6 hrs, 12 hrs, 18 hrs, and 24 hrs.
Normal BG
<4 hrs: ≥40
4-48 hrs: ≥45
>48 hrs: ≥60
Low BG
<4 hrs: 25-39
4-48 hrs: 30-44
>48 hrs: 45-59
Critically Low BG
<4 hrs: <25
4-48 hrs: <30
>48 hrs: <45
Continue routine care & screening based on "at risk category"
Administer glucose gel[1] AND feed newborn and recheck BG in 30 minutes
Administer glucose gel[1] and feed AND notify LIP for transfer to NICU/ICN-3[2] (Note do not give glucose gel more than twice)
If newborn has returned to green pathway after low BG they must have at least 2 consecutive normal BGs 2-3 hours apart (1 pre-feed) before screening is complete
If recheck normal proceed to green pathway
If recheck low administer glucose gel AND feed baby AND recheck in 30 minutes
If recheck critically low administer glucose gel AND feed baby AND notify LIP for transfer to NICU/ICN-3[2] (red pathway)
If newborn symptomatic and BG <40 notify LIP for transfer to NICU/ICN-3[2] and give glucose gel if not already given twice. Do not feed infant. An IV should be placed upon arrival.
Feeds for Low Glucoses:
-1st low glucose: Breastfeed OR feed 15 mL EBM/DBM/formula (give 30-60 mL if > 48 hrs old)
- 2nd/3rd low glucose: Breastfeed AND feed 15-30 mLEBM/DBM/formula (give 30-60 mL if >48 hrs old)
Please Note:
- Newborns may receive glucose gel a maximum of 2 times regardless of when doses are given
- If newborn has 3 low BGs, consecutive or not, or if newborn has 1 critically low BG, notify LIP for transfer to NICU/ICN-3[2]
If recheck normal return to green pathway
If low/critically low do NOT give glucose again and notify LIP for transfer to NICU/ICN-3[2]
1. When infant in L&D, glucose gel is to be given by MBU staff, UNLESS the glucose is <25. Then NICU/ICN-3 should be notified for transfer.
2. Contact ICN-3 0800 - 1700 and NICU at night

LIV. VITAMIN K IN NEONATES

The Stanford Newborn Website has a review of Vitamin K. The information below is a brief summary and directly pasted from their website. You can review their website for complete information.

> Vitamin K is needed for synthesis of clotting factors and human milk has only small amounts of Vitamin K. Lactobacillus, the primary gut flora in human milk fed infants, does not make vitamin K. Formula is slightly protective since it has more Vitamin K. This can lead to Vitamin K Deficiency Bleeding, or Hemorrhagic Disease of the Newborn. This is very rare, 0.001% to 1.5%.
>
> There is early, classic and late onset disease that can present with spontaneous bleeding. Treatment is subQ. Risk factors for early disease are seizure meds that interfere with vitamin K metabolism, anticoagulants including aspirin, and antibiotics, especially cephalosporin. Classic disease is more common in human milk infants and late disease can be due to CF, celiac disease, A1-antitrypsin deficiency.

A. Prophylaxis: 0.5mg – 1mg vitamin K IM at birth
    a. If Parents Refuse IM Vitamin K:
        i. 2 – 4 mg PO vitamin K after first feeding then 2mg at 2 – 4 weeks and again at 6 – 8 weeks
        OR
        ii. 2 – 4 mg PO vitamin K after first feeding then 2mg within first week and weekly while breast/chestfeeding
        OR
        iii. 2mg PO vitamin K after first feeding then 2mg within first week followed by 25 mcg daily for 13 weeks
        iv. Notes about Oral Regimens
            1. There is no licensed PO form in the US
            2. In countries that have gone to PO prophylaxis, failures (even with good compliance) have been reported. Failures have not been reported with IM prophylaxis.
            3. Since multiple doses are required, compliance is an issue
            4. Advise parents regarding the increased risk of VKDB (exact numbers are unknown)
            5. Dietary changes in the gestational parent have little effect on overall vitamin K status of newborn

6. Vitamin K supplements of 5mg/day (800% RDA) taken by the gestational parent have been shown in one study to raise infant serum levels to near formula-fed levels in human milk, but there is no FDA approved MVI that contains this amount of vitamin K

B. Addressing Parental Concerns
    a. **Does vitamin K cause cancer?**
        i. One study published in the British Medical Journal in 1990 raised this concern, suggesting that the risk of cancer was doubled in babies who received vitamin K at birth.
        ii. **Many** studies since then in Europe and in US have refuted this claim and found no association between the two. Only one other study (aside from a 1992 paper from the same author) suggested a possible association between vitamin K and the risk of ALL.
        iii. There is good consensus among experts that IM vitamin K prophylaxis is safe and is **not** associated with childhood cancer.
    b. Does vitamin K cause jaundice?
        i. There were reports of hemolytic anemia and hyperbilirubinemia severe enough to cause kernicterus in the mid 1950s with high doses (50mg) of vitamin K2 (menadione). As a result, use of this form of vitamin K was abandoned. We now give infants vitamin K1 (phytonadione). Vitamin K1 has been associated with hyperbilirubinemia only in **extremely high** doses (25 – 30mg). The effect was particularly seen in premature infants though it was also present - albeit to a lesser degree - in term infants. This has not been a problem when vitamin K1 is given in normal therapeutic doses (0.5 - 1mg).
    c. What other side effects have been reported?
        i. Anaphylaxis, though most common after IV infusion, has rarely been reported with IM injection.
        ii. Scleroderma-like patch at the site of injection has been reported primarily in adults after repeated injections, though there are reports of 7 infants with similar dermatologic reactions (again, millions of doses are given without problems).

C. **Other excellent resources on Vitamin K**
    a. A summary from Evidence Based Birth on Vitamin K is excellent. Patients can also be referred to this website for more information.
        i. https://evidencebasedbirth.com/evidence-for-the-vitamin-k-shot-in-newborns/

LV. POSTPARTUM CESAREAN THROMBOPROPHYLAXIS

A. Introduction: Pregnancy is a hypercoagulable state with a 4-5x increase in Deep Venous Thrombosis (DVTs) in pregnancy. When one adds additional risks for DVTs such as surgery, infection, immobilization this risk can increase dramatically. Although it appears that 2/3 of DVTs occur antepartum (with 50% being silent), pulmonary embolism more commonly (up to 60%) occurs postpartum. This Venous Thromboembolism (VTE) risk is up to 20-fold higher after a C-section. In fact, 75% of pregnancy related deaths from a postpartum VTE are associated with a C-section.

B. Risk Assessment for VTE 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 the pre-operative area, confirmed during the time out process and will remain in place until the 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
   - Preeclampsia
   - 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 the pre-operative area, confirmed during the time out process and will remain in place until the 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 the pre-operative area, confirmed during the time out process and will remain in place until the patient is fully ambulatory.
   - Receive LMWH starting 12 hours post-op after clinical evaluation to verify patient stability without bleeding concerns that would contraindicate the use of LMWH. Continue LMWH until discharge.

Special Patient Populations - there may be patients who have been seen antenatally who have a h/o VTE or a known thrombophilia. These patients will have a postpartum plan delineated in the chart, which may include longer periods of anticoagulation (i.e. 6 weeks - 6 months). Those with a recent VTE will require therapeutic rather than prophylactic doses of LMWH.

C. Anticoagulation Thromboprophylaxis

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

Table 3. Recommended Antenatal Prophylactic Doses of Low-Molecular-Weight Heparin According to Body Weight and Risk.*

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.

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REFERENCES

- Jackson E, Curtis KM, and Gaffield ME. Risk of Venous Thromboembolism during the postpartum period. Obstet and Gynec. 2011;117:691-703
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LVI. GUIDELINES FOR PERIPARTUM PAIN MANAGEMENT IN THOSE WITH OPIATE DEPENDENCY

See SOP on Peripartum pain management for complete information.

In Labor:

1. Epidural is the most effective form of labor pain control. Much of the effect is due to local anesthetic action and is not affected by use of opioid replacement therapy.
2. Patients may present in labor with opioid withdrawal. If the patient desires methadone, it can be started at 30mg/day, as per protocol. Fentanyl can be used for labor pain if there are no signs of over-sedation.They can be started on low dose buprenorphine even if they received Fentanyl in labor.

Post-Partum in General:

Patients should continue opioid replacement therapy in labor and postpartum. Dividing methadone bid and buprenorphine q 6-8 hours may enhance pain control. Consideration can be given for increasing the buprenorphine dose to as much as 32 mg divided q 6 hours for 24-48 hours after delivery to improve pain management, with return to pre-delivery thereafter.

Following Vaginal Delivery:

1) Opioid pain management is not generally required following uncomplicated spontaneous or operative vaginal delivery.
2) Patients with 3rd or 4th degree perineal lacerations may encounter negative effects from narcotic pain medication due to increased constipation. If regional anesthesia is used for the repair or was used in labor, intrathecal morphine may be considered in this situation, with a plan to avoid oral opioids for pain management.

Following Cesarean Section or Tubal Ligation:

1) If intrathecal or epidural morphine was used, the anesthesiology team manages all opioids for the first 24 hours postoperatively. Anesthesia must be consulted to give additional opioids during this time.

2) If possible, a continuous epidural infusion postpartum on WSC if there is a bed and nursing available, however, often we do not have the staffing to offer this option.
3) A transversus abdominis plane block (TAP block) improves post-op pain and may be an option for patients that did not receive intrathecal or epidural morphine.
4) Acetaminophen 1000 mg IV or ketorolac 30 mg IV can be used in the PACU.
5) Patients who undergo cesarean section with general anesthesia may do best initially with hydromorphone PCAs, however transitioning to oxycodone as soon as they tolerate oral intake will usually result in better pain control. A hydromorphone PCA for an opiate dependent patient can be started at a dose of 0.2mg q 10 minutes on demand, with a one-hour lockout of 1mg. Avoiding using a basal rate decreases the risk of over-sedation. Once oral medications are initiated, a starting dose of oxycodone 10 mg q 4 hours is recommended.
6) Once oral intake resumes postoperatively, oxycodone is more effective for pain due to its longer duration of action compared to IV agents. Opioid dependent patients will often need higher doses ranging from 10-20 po q 4-6 hours. Order 10 mg q 4 prn severe pain and 5 mg po q 4 hr prn breakthrough pain. If the 5 mg prn dose is routinely needed, the baseline dose can be increased to 15 mg q 4 hours. A max of 20 mg q 4 hours should only be used for the first 48-72 hours.
7) Decrease oxycodone dose ASAP for any sign of sedation.
8) After 48-72 hours, oxycodone dose should be weaned.
9) In rare situations where more opioids are needed, use oral morphine or hydromorphone instead.
10) After 48-72 hours if a patient is taking more than 40 mg in 24 hours and breast/ human milk feeding, the baby should be monitored closely for signs of sedation.
11) If needed, keep the gestational parent inpatient longer to wean oxycodone down and monitor the infant for sedation if being given human milk.

12) If a patient prefers buprenorphine, micro-dosing protocol can be considered. See section on buprenorphine inpatient induction.

At the Time of Discharge from the Hospital:

1) Prescriptions for TID ibuprofen and QID acetaminophen are recommended upon discharge. In addition, postoperative patients should receive a prescription for sufficient oxycodone to last until their follow up appointments in the clinic. Appropriate ibuprofen and acetaminophen dosing recommendations should be made for patients with hepatitis C.
2) After a cesarean delivery, an appointment is recommended in 5-7 days so that the amount of oxycodone prescribed can be limited to what is needed during this period.
3) Those that are breast/chestfeeding should not be discharged home on more than 40 mg of oxycodone per day.
4) Buprenorphine or suboxone should be continued on discharge. Enough medication should be prescribed to last until the follow up appointment, considering the amount of medication prescribed at the last appointment before admission.
5) Many insurance companies will refuse to pay for oxycodone when patients are receiving prescriptions for buprenorphine, despite documentation that the oxycodone is being appropriately used for post-operative pain management. Patients should be made aware of this possibility so that they can plan for purchasing medication if necessary, and a Milagro outpatient nurse should also be notified so that contact with the insurance company and pharmacy can be made as soon as possible.

LVII. BUPRENORPHINE INPATIENT INDUCTION FOR OPIATE ADDICTION IN PREGNANCY

Please see Milagro page on the wiki for more resources including the Subutex start H&P template.

Opioid use in pregnancy is associated with increased risk of preterm delivery, fetal growth restriction, neonatal opioid withdrawal syndrome, and sudden infant death syndrome. Pregnant patients with substance use disorders including opioid use disorder are at increased risk for delayed prenatal care and many do not disclose their history of substance use. Treatment with medications for opioid use disorder (MOUD) improves pregnancy outcomes for opioid dependent patients 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.

The following guidelines have been developed to help initiate buprenorphine treatment in pregnant patients with opioid addiction who are not currently being maintained with methadone. Pregnant patients already on methadone should usually be maintained on methadone if they can reliably access methadone throughout pregnancy due to the complexity of transfer from methadone to buprenorphine in pregnancy.

Initial evaluation for buprenorphine initiation during pregnancy may occur during Milagro Prenatal clinic, at UNM's Alcohol and Substance Abuse Program, or in UNM Obstetrical triage. A physician or nurse familiar with the risks and benefits of methadone and buprenorphine replacement therapy should do the evaluation during pregnancy.

A. Take a detailed history including the following:

1. Substances used, age at first use, frequency of use, route of use, and last use
    a. Alcohol
    b. Tobacco
    c. Opioid type such as oxycodone, fentanyl, methadone, heroin, etc,
    d. Cocaine
    e. Methamphetamine
    f. Marijuana
    g. Benzodiazepines
    h. Barbiturates
    i. Hallucinogens
    j. Inhalants

k. Synthetics (bath salts, Spice)

2. History of tolerance, withdrawal, overdose.
3. Treatment history
4. Medical history
5. Mental health history – anxiety, depression, trauma, suicide attempts, previous medications
6. Social history
    a. Transportation
    b. Adequacy, safety, and stability of housing
    c. Childcare issues
    d. Relationships and safety, including sexual orientation, identity, and risk factors for STIs and HIV
    e. Close/ongoing relationships with people with SUD
    f. Support system – emotional and financial
    g. Criminal justice involvement
    h. Employment status and quality of work environment
7. Motivations for change – or coerced such as incarceration?
8. Family history including substance use of parents, siblings, partners, children.

B. Complete the DSM-5 Criteria for Diagnosis of Opioid Use Disorder

Check all that apply

	Opioids are often taken in larger amounts or over a longer period of time than intended.
	There is a persistent desire or unsuccessful efforts to cut down or control opioid use.
	A great deal of time is spent in activities necessary to obtain the opioid, use the opioid, or recover from its effects.
	Craving, or a strong desire to use opioids.
	Recurrent opioid use resulting in failure to fulfill major role obligations at work, school or home.
	Continued opioid use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of opioids.
	Important social, occupational or recreational activities are given up or reduced because of opioid use.
	Recurrent opioid use in situations in which it is physically hazardous
	Continued use despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by opioids.

	*Tolerance, as defined by either of the following: (a) a need for markedly increased amounts of opioids to achieve intoxication or desired effect (b) markedly diminished effect with continued use of the same amount of an opioid.
	*Withdrawal, as manifested by either of the following: (a) the characteristic opioid withdrawal syndrome (b) the same (or a closely related) substance are taken to relieve or avoid withdrawal symptoms.

Total Number Boxes Checked: _____

Severity: Mild: 2-3 symptoms. Moderate: 4-5 symptoms. Severe: 6 or more symptoms

Criteria from American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition,. Washington, DC, American Psychiatric Association page 541

C. Perform a Clinical Opioid Withdrawal Score (COWS) score Online Calculator

Enter scores at time zero, 30 minutes after first dose, 2 hours after first dose, etc.	Times of Observation:				
Resting Pulse Rate: Record Beats per Minute					
Measured after patient is sitting or lying for one minute 0 = pulse rate 80 or below 1 = pulse rate 81-100 • 2 = pulse rate 101-120 • 4 = pulse rate greater than 120					
Sweating: Over Past 1/2 Hour not Accounted for by Room Temperature or Patient Activity					
0 = no report of chills or flushing 1 = subjective report of chills or flushing 2 = flushed or observable moistness on face • 3 = beads of sweat on brow or face • 4 = sweat streaming off face					
Restlessness Observation During Assessment					
0 = able to sit still 1 = reports difficulty sitting still, but is able to do so • 3 = frequent shifting or extraneous movements of legs/arms • 5 = Unable to sit still for more than a few seconds					
Pupil Size					
0 = pupils pinned or normal size for room light 1 = pupils possibly larger than normal for room light • 2 = pupils moderately dilated • 5 = pupils so dilated that only the rim of the iris is visible					
Bone or Joint Aches if Patient was Having Pain Previously, only the Additional Component Attributed to Opiate Withdrawal is Scored					
0 = not present 1 = mild diffuse discomfort • 2 = patient reports severe diffuse aching of joints/muscles • 4 = patient is rubbing joints or muscles and is unable to sit still because of discomfort					
Runny Nose or Tearing Not Accounted for by Cold Symptoms or Allergies					
0 = not present 1 = nasal stuffiness or unusually moist eyes • 2 = nose running or tearing • 4 = nose constantly running or tears streaming down cheeks					
GI Upset: Over Last 1/2 Hour					
0 = no GI symptoms 1 = stomach cramps 2 = nausea or loose stool • 3 = vomiting or diarrhea • 5 = multiple episodes of diarrhea or vomiting					
Tremor Observation of Outstretched Hands					
0 = no tremor 1 = tremor can be felt, but not observed • 2 = slight tremor observable • 4 = gross tremor or muscle twitching					
Yawning Observation During Assessment					
0 = no yawning 1 = yawning once or twice during assessment • 2 = yawning three or more times during assessment • 4 = yawning several times/minute					
Anxiety or Irritability					
0 = none 1 = patient reports increasing irritability or anxiousness • 2 = patient obviously irritable/anxious • 4 = patient so irritable or anxious that participation in the assessment is difficult					
Gooseflesh Skin					
0 = skin is smooth 3 = piloerection of skin can be felt or hairs standing up on arms • 5 = prominent piloerection					
Score: 5-12 = Mild 13-24 = Moderate 25-36 = Moderately Severe More than 36 = Severe Withdrawal	Total score				
	Observer's initials				

From naabt.org

D. Obstetrical assessment:

1. Labs:
    a. Order prenatal labs (this now includes an HCV antibody)
        - If patient reports a h/o HCV, order an HCV PCR in addition
    b. Check LFTs

    c. Rapid urine drug screen (RUDA6 in OB Triage or quick tox in clinic), fentanyl or UDM pain depending on history (will take ~ 24 hours to return)
2. Perform an NST ≥ 24 weeks.
3. Imaging:
    a. If no previous dating, do an initial dating US in triage. May ask OB/GYN/MCH Fellow or FMOB for help if needed per UNM OB MCH Collaboration guidelines (see above).
        - Send for a formal US after admission if in the 2nd or 3rd trimester for dating and anatomy
    b. If over 28 weeks and no growth US in the last 4 weeks, perform biometry for fetal growth to rule out FGR and MVP to rule out oligohydramnios (commonly seen in acute withdrawal). Initiation of buprenorphine should not be delayed for this however all people initiating MOUD as an inpatient and above 24 weeks should have amniotic fluid assessment.

4. Sign Buprenorphine Consent
    a. Counseled regarding buprenorphine and consent signed. Evaluate for any contraindications to initiation of buprenorphine (see below). Must agree to outpatient substance abuse counseling and case management through Milagro/Focus.
    b. If < 22 weeks ega, they can have an outpatient induction through Milagro Prenatal clinic if desired, but in the current epidemic “wave” of high dose fentanyl use is seldom a viable option. Contact Milagro RN case manager, Mandy Hatley, to arrange outpatient prenatal intake and visit if the patient is not being admitted for buprenorphine induction.
    c. Patients of any gestational age may be admitted for induction and should be admitted if in acute withdrawal.

Patients interested in Buprenorphine Induction:

• Patients calling triage interested in inductions should be informed to arrive at 8-9 am after not using opiates after midnight so that they are in early withdrawal. Inpatient inductions should ideally start at 8-10 am with a patient in moderate withdrawal.

• Patients may also be given the Milagro Clinic number (505-463-8293) to make an appointment prior to admission if they prefer. They can be given information about inpatient induction at that time.

- Patients may be discharged from triage if not in acute withdrawal to return later to begin their induction when they are in withdrawal depending on social circumstances. If returning will be challenging, they may be admitted and observed until they enter withdrawal.

Acute withdrawal or an incarcerated patient:

- If a patient presents to triage in acute withdrawal, offer inpatient buprenorphine or methadone induction

- If an incarcerated patient is brought in for induction, admission is recommended for Medication Assisted Treatment even if not in withdrawal. Daily access to buprenorphine or methadone during incarceration must be available if a patient is to be started on either agent.

If a provider calls triage inquiring about buprenorphine inductions, they may be referred to the Milagro PALS line to speak with the on-call Milagro Attending.

Current Milagro patients with prescription questions should be referred to the daytime patient cell phone for questions (505-463-8293).

Please contact Milagro Attending on TigerConnect for questions.

Financial Coverage for Buprenorphine: UNM Care and all the Medicaid Centennials will cover buprenorphine without a prior authorization. Some private insurance may require a PA and this should be initiated at time of admission.

Patients without Medicaid should be warned that buprenorphine costs ~ $1 per mg/day out of pocket and should be advised to apply for Medicaid if eligible after discharge.

F. Contraindications to initiation of buprenorphine in pregnancy

1. Does not meet DSM-5 Criteria for Opioid Dependence.

2. Polysubstance use is not a contraindication however concurrent benzodiazepine use is a high risk situation and should be discussed with the FMOB attending or other addiction medicine trained physician. The concern is the increased risk of overdose and death with concurrent opiate and benzodiazepine use. This risk is likely greater with a combination of benzodiazepines and methadone.

3. Inability or unwillingness to be seen for prenatal care and buprenorphine assessment every 1-4 weeks at the UNM Milagro clinic or follow-up planned with another care provider such as La Familia or El Centro.

4. Chronic active hepatitis with laboratory evidence of significant liver damage (i.e. transaminases > 3 times upper limit of normal).

5. Preference for methadone treatment after counseling.

6. Patients on methadone should be continued on methadone unless there are exceptional geographical issues or patient declined continuing methadone.

Buprenorphine Induction and Maintenance in Pregnant Patients with Opioid Use Disorder

GUIDELINE STEPS

1. Obstetric Buprenorphine Indications and Restrictions

    1.1. This guideline provides recommendations for induction and maintenance of buprenorphine in opioid dependent pregnant and recently postpartum patients.

    1.2. Patients admitted to the hospital that are currently being treated in an outpatient setting for opioid use disorder may continue on their current maintenance therapy with buprenorphine during their inpatient hospital stay.

        1.2.1. The provider writing for buprenorphine is not required to have a special certification or waiver other than their standard DEA number in the inpatient or outpatient setting.

    1.3. DATA-Waiver registration for the prescribing of buprenorphine is no longer required. Providers with a standard DEA registration who are permitted to prescribed CIII medications may write for buprenorphine.

        1.3.1. Providers should consider consultation with the Maternal Child Health team for buprenorphine inductions during pregnancy.

        1.3.2. Providers are strongly encouraged to attend training sessions relating to prescribing buprenorphine during pregnancy.

1.3.2.1. ASAM buprenorphine courses are available to all providers at: https://elearning.asam.org/pregnancy-neonatal

1.3.3. Additional requirements for prescribing buprenorphine may go into effect in future dates and providers should review current SAMHSA and DEA requirements periodically to ensure compliance and safe medication utilization.

2.1. Obstetric inpatient buprenorphine induction is limited to the following:

2.1.1. Positive pregnancy test, ultrasound, or fetal monitoring evidence of pregnancy or within 6 weeks postpartum

2.1.2. Elects to pursue buprenorphine therapy after appropriate counseling (*see section 3*)

2.1.3. Opioid dependent

2.1.4. Medically stable

2.1.5. Willing and able to be seen for prenatal care and buprenorphine assessment at UNM Milagro clinic OR other outpatient prenatal care clinic able to manage buprenorphine during pregnancy.

2.2. Use with caution in:

2.2.1. Severe psychiatric illness

2.2.2. Anticipated acute pain requiring opioid agonist therapy or surgery in the next 48 hours, including cesarean delivery however this is not a contraindication.

2.2.3. Concomitant ethanol or benzodiazepine use disorder.

2.2.4. Acute or chronic hepatic disease with evidence of significant hepatic dysfunction.

2.2.5. Patients who require opioids for pain management

3. Patient Counseling and Education

3.1. Patients should be counseled on the following:

3.1.1. Explanation of benefits and risks of buprenorphine in pregnancy for OUD with regards to maternal and newborn issues

3.1.2. Comparison of methadone and buprenorphine for OUD in pregnancy

3.1.3. Provide patient information on buprenorphine treatment

3.1.4. Review risks of overdose, harm reduction strategies with intranasal naloxone and increased risk of overdose with use of benzodiazepine, ethanol or other medications.

3.1.5. Patients are strongly encouraged to engage in substance use disorder counseling, keep scheduled prenatal appointments, submit periodic urine drug screening assays, and take medications as prescribed.

3.1.6. Patients must keep medications locked and out of reach of other people and pets and to call 911 if a child is exposed to buprenorphine.

3.1.7. Neonatal opioid withdrawal syndrome (NOWS) and the need for at least 4 days of neonatal observation after birth, which may result in prolonged hospital stay.

3.1.8. Discuss safety of breastfeeding on buprenorphine and potential reduction in NOWS.

4. Patient Assessment

4.1. Prior to buprenorphine induction, providers should complete the following screenings and assessments:

4.1.1. Review history of substance use and review Prescription Monitoring Program (*PMP*).

4.1.2. Obtain verbal consent for urine drug screening and place order for "Urine Drug Screen" *(UDSCN).*

4.1.2.1. If UDSCN is positive for non-opioid substances or if assay is inconsistent with patient screening or assessment, order "Urine Drug Screen, with Reflex to Confirmations (*UDSCNR*).

4.1.2.2. Providers may order "Rapid Urine Drug Assessment 6" (RUDA6) AND "Urine fentanyl" (UFEN) if more rapid screening is indicated.

4.1.3. Obtain baseline COWS (Clinical Opioid Withdrawal Scale) assessment (*see appendix C*) and vital signs, including blood pressure, heart rate, oxygen saturation, and respiratory rate.

4.1.4. Perform non-stress test (NST) if patient is ≥ 23 weeks gestation or fetal heart tones if patient is < 23 weeks.

4.1.5. Place ad-hoc ultrasound as appropriate based on ultrasound history and gestational age.

4.1.5.1. For all patients perform an anatomic survey if above 18 weeks to confirm obstetrical dating.

4.1.5.2. For patients ≥ 26 weeks gestation, assess fetal growth to rule out fetal growth restriction if not performed within the last 4 weeks.

4.1.5.3. Ultrasound does not need to be completed prior to buprenorphine induction, however limited ultrasound should be done to assess viability if unable to assess fetal heart tones and amniotic fluid assessment.

4.1.6. Obtain the following labs (but do not necessarily need to result prior to buprenorphine induction):

4.1.6.1. Routine labs contingent to standard obstetric care

4.1.6.2. Liver function test

5. Inpatient Buprenorphine Induction Steps

5.1. The admitting provider will select one of the following buprenorphine induction pathways contingent to the initial patient assessment and COWS assessment (*see appendix C*):

5.1.1. The "OB Low Dose Buprenorphine Induction Pathway" (*see appendix A*) should be considered for patients with COWS ≤ 12, OR for patients with history of precipitated or intolerable withdrawal during previous buprenorphine induction.

5.1.2. The "OB Buprenorphine Induction Pathway" (*see appendix B*) should be considered for patients with COWS >12 AND at least one sign of objective withdrawal, including tachycardia, mydriasis, yawning, rhinorrhea, vomiting, diarrhea, or piloerection.

5.1.3. Patients with severe precipitated withdrawal from either buprenorphine induction pathway should have MCH Fellow consultation or Milagro Attending through PALS.

5.2. The provider should consider ordering scheduled or as needed symptomatic relief medications to help alleviate withdrawal symptoms, which may include the following:

5.2.1. Gabapentin 300 mg PO every 6 hours

5.2.2. Hydroxyzine 50 mg PO every 6 hours

5.2.3. Dicyclomine 20 mg every 6 hours

5.2.4. Tizanidine 2 or 4 mg every 6 hours

5.2.5. These medications may be continued until target buprenorphine dose has been achieved and may consider changing from scheduled to as needed after 48 hours or earlier at provider discretion. Note these medications are not to be routinely ordered for methadone initiation

6. Cross-tapering may be considered for select patients in the “OB Low Dose Buprenorphine Induction Pathway” with *one* of the following:

6.1.1. Developing pain in the setting of opioid withdrawal requiring opioid analgesia

6.1.2. History or risk factors for opioid withdrawal or at risk for elopement during buprenorphine induction without the use of cross tapering

6.1.3. Increase in COWS score with COWS >7 after starting “OB Low Dose Buprenorphine Induction Pathway”

7. Monitoring

7.1. COWS assessment (*see appendix C*) and vital signs, including blood pressure, heart rate, oxygen saturation, and respiratory rate, will be performed by registered nurse prior to administration of first dose of buprenorphine, 1 hour after the first dose, and a minimum of every 4 hours while patient is awake.

7.1.1. More frequent monitoring may be indicated based on provider assessment and contingent to specific buprenorphine induction pathway.

7.1.2. COWS assessment and vital signs will be documented in the Interactive View.

7.1.3. COWS assessment may be discontinued when the patient is at goal dose AND COWS assessment <5 for at least 24 hours.

7.2. Fetal non-stress test (NST) monitoring should be performed at least once a day for patients with gestational age >23 weeks.

7.3. Patients with COWS assessment >20 AND gestational age >23 weeks should have an NST performed shortly after assessment and should consider continuous fetal monitoring until the patient is stable.

7.3.1. Patients with fetal growth restriction, oligohydramnios or non-reassuring fetal heart tracing may require continuous fetal monitoring during buprenorphine induction, determined by MCH Fellow or Milagro Attending consultation.

8. Goals of treatment

8.1. To induce a patient to goal dose for buprenorphine while mitigating withdrawal symptoms

8.2. Elimination of opioid hunger and cravings

8.3. Minimize sedation

8.4. Avoid respiratory depression (respiratory rate <12 respirations per minutes)

9. Discharge Considerations

9.1. Patients may be considered for discharge when:

9.1.1. Patient is at goal dose of buprenorphine

9.1.2. COWS score is <5 for at least 12 hours

9.1.3. Discharge is appropriate from obstetric and clinical assessment

9.2. Patients should have a prenatal and buprenorphine outpatient follow up appointment scheduled within 7 days of discharge.

9.3. Providers should prescribe a sufficient quantity of buprenorphine to last until the follow up appointment.

9.4. Co-prescribe intranasal naloxone for all patients with buprenorphine prescriptions.

9.5. Breast/chestfeeding should be encouraged for postpartum patients on buprenorphine who are not using illicit substances to decrease severity of NOWS.

9.6. Create a Plan of Safe Care (POSC) with families and caregivers with an infant with NOWS prior to discharge in collaboration with social work and providers. *https://sharenm.s3.amazonaws.com/library/Et45BmyS4jvltBWsuv3SI18j2ovOX4IAg9YBlVpO.pdf*

OB Low-Dose Buprenorphine Induction

1. The *OB Low-Dose Buprenorphine Induction Pathway* is intended for patients with:

1.1. COWS assessment ≤ 12 (*see appendix C*)

1.2. Meeting patient eligibility criteria noted in *section 2*.

2. The objective of this pathway is to titrate buprenorphine, starting at a low dose (buprenorphine 150 mcg), up to a goal dose of buprenorphine 8 mg three times a day.

2.1. Dosing as high as buprenorphine 48 mg within 24 hours may be required.

2.2. Patients should be discharged on buprenorphine 8 mg three times a day, even if they require higher doses during the induction period.

3. COWS assessment and vital signs, including blood pressure, heart rate, oxygen saturation, and respiratory rate, will be performed by a registered nurse prior to administration of the first dose of buprenorphine, 1 hour after each administration, and at a minimum of every 4 hours while the patient is awake.

3.1. COWS assessment may be discontinued when the patient is at goal dose AND COWS assessment <5 for at least 24 hours.

4. Buprenorphine administration during this pathway should not be deferred for low COWS assessment or somnolence as long as respiratory rate >12 respirations per minute.

5. Patients who develop moderate to severe withdrawal symptoms during this pathway, demonstrated by COWS assessment >12, should be considered for consultation with MCH Fellow or Milagro Attending through PALS.

5.1. Considerations for escalation to *OB Buprenorphine Induction (appendix B)* may be made for patients with COWS assessment >12.

6. Supportive medications (*see below)* should be considered in most patients.

6.1. These medications may be continued until target buprenorphine dose has been achieved and may consider changing from scheduled to as needed after 48 hours or earlier at provider discretion.

7. Cross-tapering may be considered for select patients in the “OB Low Dose Buprenorphine Induction Pathway” with one of the following:

7.1.1. Develop pain in the setting of opioid withdrawal requiring opioid analgesia.

7.1.2. History or risk factors for opioid withdrawal or at risk for elopement during buprenorphine induction without the use of cross tapering

7.1.3. Increase in COWS score with COWS >7 after starting “OB Low Dose Buprenorphine Induction Pathway.”

OB Low-Dose Buprenorphine Induction:

1. Buprenorphine 150 mcg buccal film (Belbuca®) scheduled every 4 hours for 3 doses

2. Buprenorphine 300 mcg buccal film (Belbuca®) scheduled every 4 hours for 3 doses

3. Buprenorphine 450 mcg buccal film (Belbuca®) scheduled every 4 hours for 3 doses

4. Buprenorphine-Naloxone 2 mg/0.5 mg sublingual film (Suboxone®) scheduled every 6 hours for 2 doses

5. Buprenorphine-Naloxone 4 mg/1 mg sublingual film (Suboxone®) scheduled every 6 hours for 2 doses

6. Buprenorphine-Naloxone 8 mg/2 mg sublingual film (Suboxone®) scheduled every 6 hours for 2 doses

7. Maintenance dose: Buprenorphine 8 mg sublingual tablet (Subutex®) OR Buprenorphine-Naloxone 8 mg/2 mg sublingual film (Suboxone®) scheduled every 6 OR 8 hours with plan to discharge home on more than 8 mg every 8 hours.

Supportive Medications:

1. Acetaminophen 1000 mg tablet by mouth every 6 hours as needed for pain, any level

2. Dicyclomine 20 mg capsule by mouth every 6 hours

3. Gabapentin 300 mg capsule by mouth every 6 hours

4. Hydroxyzine 50 mg capsule by mouth every 6 hours

5. Tizanidine 2 mg tablet by mouth every 6 hours

Cross-taper protocol:

1. Hydromorphone 1-4 mg tablet by mouth every 4 hours as needed for “Pain, breakthrough” in the setting of opioid withdrawal

Buprenorphine Traditional/Rapid Induction

1. The Traditional /Rapid Buprenorphine Induction Pathway is intended for patients with:

1.1. COWS assessment >12 (see appendix C)

1.2. Patients with at least one sign of objective withdrawal, including tachycardia, mydriasis, yawning, rhinorrhea, vomiting, diarrhea, or piloerection.

1.3. Meeting patient eligibility criteria as noted in section 2.

2. The objective of this pathway is to rapidly titrate buprenorphine and eventually discharge the patient on buprenorphine 8 mg three times a day.

2.1. Dosing as high as buprenorphine 48 mg within 24 hours may be required.

2.2. Patients should be discharged on buprenorphine 8 mg three times a day, even if they require higher dosing during the induction period.

3. COWS assessment and vital signs, including blood pressure, heart rate, oxygen saturation, and respiratory rate, will be performed by registered nurse prior to administration of first dose of buprenorphine, 1 hour after each buprenorphine administration, and at a minimum of every 4 hours while patient is awake.

3.1. COWS assessment may be discontinued when the patient is at goal dose AND COWS assessment <5 for at least 24 hours.

4. Buprenorphine administration during this pathway should not be deferred for low COWS assessment or somnolence as long as respiratory rate is >12 respirations per minute.

5. Patents who develop moderate to severe withdrawal symptoms, demonstrated by COWS assessment that is increasing AND >12, AFTER administration of at least buprenorphine 32 mg; OR have a COWS assessment >24 at any time, should be considered for consultation with MCH Fellow or Milagro Attending through PALS.

6. Supportive medications (see below) should be considered in most patients.

6.1. These medications may be continued until target buprenorphine dose has been achieved and may consider changing from scheduled to as needed after 48 hours or earlier at provider discretion.

OB Buprenorphine Induction:

1. Buprenorphine 8 mg sublingual tablet (Subutex®) once an hour for two doses for a total of buprenorphine 16 mg.

2. Obtain COWS score one hour after second dose

a. If COWS assessment ≤12, administer buprenorphine 8 mg sublingual tablet (Subutex®) once for a total of buprenorphine 24 mg.

b. If COWS assessment >12, administer buprenorphine 16 mg sublingual tablet (Subutex®) once for a total of buprenorphine 32 mg.

3. Obtain COWS score one hour after previous dose

a. If COWS assessment ≤12, administer buprenorphine 8 mg sublingual tablet (Subutex®) every 8 hours scheduled as maintenance starting 8 hours after previous dose.

b. If COWS assessment >12, consult MCH Fellow or Milagro Attending through PALS for escalation of care

Supportive Medications:

1. Acetaminophen 1000 mg tablet by mouth every 6 hours as needed for pain, any level

2. Dicyclomine 20 mg capsule by mouth every 6 hours

3. Gabapentin 300 mg capsule by mouth every 6 hours

4. Hydroxyzine 50 mg capsule by mouth every 6 hours

5. Tizanidine 2 mg tablet by mouth every 6 hours

F. Buprenorphine Inpatient Monitoring Recommendations

1. Vital signs are done at least q six hours while awake.

2. NST and amniotic fluid assessment with maximum vertical pocket on admission if over 24 weeks.

3. Daily NST daily.

4. If COWS score of >20 during buprenorphine induction process, then obtain vital signs and an NST at that time.

5. If FGR, oligohydramnios, or NRFS on admission NST, the patient should have continuous monitoring on L&D during the induction. Transfer to the floor can occur once the patient is out of acute withdrawal if fetal monitoring is appropriate to stop continuous monitoring

G. Management of precipitated withdrawal during buprenorphine Induction

1. Precipitated withdrawal usually occurs during the initial dose of buprenorphine. Accelerating withdrawal that needs additional buprenorphine can be mistaken for precipitated withdrawal

2. Precipitated withdrawal is more common when the patient has been on a long acting opioid such as methadone or MS Contin or perhaps chronic fentanyl use.

3. If precipitated withdrawal occurs, please consult with one of FM addiction medicine or fellowship trained MCH faculty.

1. Will usually continue to increase buprenorphine at 2 mg 1-2 hours and may add clonidine 0.1 mg po q8 hrs.

2. Use other symptom medications including acetaminophen, hydroxyzine and/or antiemetics.

H. Staffing & Documentation:

1.The patient should be seen and counseled by the MCH fellow or an MCH generalist faculty who works in Milagro clinic or has other training and ongoing experience with buprenorphine induction in patients using Fentanyl.

2. If a generalist MCH attending is starting the induction, please inform the MCH fellow and FMOB/Milagro attending so that they can continue to follow the patient if needed depending on staffing of the service and service volume.

3. The resident should document brief progress notes at least q 12 hours during the first 24 hours of induction.

4. After the initial H+P, these progress notes can be very brief notes ie: 3-4 sentences stating assessment of patient (stable, withdrawal improved, COWS score, etc.) and the next dose ordered. The patient should be seen 1 hr after the first dose and then 1-2 hr later. They should be seen prior and after additional doses or prn for worsened withdrawal symptoms or other concerns.

I. **Readiness for discharge**

1. Minimal or no signs or symptoms of withdrawal approximately 4 hours after their last buprenorphine dose.
2. Have prenatal and buprenorphine follow up scheduled within a week.
3. We have assurance of the ability to have prescriptions filled to last until time of that appointment.
4. Many patients who are admitted in the morning ~ 8 am in withdrawal for induction may be able to be discharged the same evening.

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Urine Drug Screen Table Reference

Drug	Window of Detection	Comments
Amphetamine	1-2 days	Multiple false positives including bupropion, fluoxetine, labetalol, promethazine, ranitidine, pseudoephedrine – send for confirmation if positive if indicated
Barbiturates	Up to 6 weeks	
Benzodiazepines	1-3 days, up to 6 weeks with heavy use of long acting benzos	May not be sensitive to therapeutic doses and low sensitivity for clonazepam and lorazepam. False positives with sertraline. Send for confirmation if indicated
Methadone	2-11 days	Will screen negative on opiate screen
Cannabinoids	1-3 days, up to 30 with chronic use	False positives possible with ibuprofen and pantoprazole, order confirmation if indicated
Cocaine	2-4 days, 10-22 days with heavy use	
Opiates (heroin, codeine, morphine)	1-2 days	

Fentanyl	1-2 days or may persist for weeks with regular use due to lipophilic properties	Will screen negative on opiate screen. Need to order separately
Oxycodone	1-2 days	Typically screens negative on opiate immunoassay and needs specific testing ordered separately.
Hydromorphone	1-2 days	May screen negative on opiate and need specific testing
Hydrocodone	2 days	May screen negative on opiate and need specific testing
Buprenorphine	3-4 days	Will screen negative on opiates. Tramadol can cause a false positive

From SAMHSA – Medications for OUD. TIP #63
https://store.samhsa.gov/sites/default/files/pep21-02-01-002.pdf

TOC

LVIII. STIMULANT USE

At UNM, the following is recommended for patients regularly using stimulants:

1. Growth ultrasounds q 4 weeks to monitor for FGR
2. Antenatal testing weekly starting at 32 weeks
3. Induction of labor at 38 weeks should be considered if unable to stop use secondary to increased risk of placental abruption.
4. Discussion of the risks of stimulant use including risk of FGR, IUFD, abruption, and preterm delivery.
5. Consideration of inpatient treatment or change in residence to avoid exposure to others using stimulants

LIX. METHADONE INDUCTION

MCH Fellow and FMOB/Milagro Attending should be consulted for all methadone starts.

Methadone dosing on weekends:

Opioid Treatment Programs (“Methadone clinics”) are often closed on weekends. If a patient misses Friday, they will not have a Saturday or Sunday take home dose. **A missed dose is not an indication for admit** if not in moderate withdrawal as defined by **COWS score of 12 or more**.

Patients being discharged postpartum on Friday may have been given take home doses for the weekend depending on when they picked up and how much they received. Please check Methasoft to see if they have adequate dosing for the weekend. They are unable to receive a dose in triage since they have an established methadone clinic.

Options are:
a. Defer discharge to Sunday
b. Discharge early enough on Friday morning (usually by 8 am) to get dose at opioid treatment program - this should only be done after talking to the program on Thursday to have plan in place.

See Methadone Triage dosing protocol for federal requirements for dosing in triage.

Methadone Initiation Principles

- The recommended starting dose is 40 mg.
- Max dose inpatient is 80 mg a day in the first 48 hours on starts.
  Please see the wiki page for more information on methadone starts and further information below on titration protocols.

Methadone Missed Dose: **cannot give missed doses in triage** (see triage dosing guidelines). This is for re-start admissions only.

- Missed 1-3 days: no reduction necessary, provide full dose
- Missed 4-6 days: reduce dose by 30% of full dose for first day, then resume full dose at second day
- Missed 7-14 days: reduce dose by 50% of full dose on first day, then reduce 30% of full dose on second day, then resume full dose on third day
- Missed >15 days: methadone induction/restart required

DESCRIPTION/OVERVIEW

This guideline outlines clinical considerations by which UNM Hospital cares for pregnant and recently postpartum patients with Opioid Use Disorder (OUD) who require inpatient methadone induction and maintenance. Pregnant patients with MOUD are encouraged to use methadone or buprenorphine for opioid use disorder throughout pregnancy, labor and delivery and postpartum.

Guidelines steps

1. **Obstetric Methadone Indications and Restrictions**

1.1. This guideline provides recommendations for induction and maintenance of methadone in opioid dependent pregnant and recently postpartum patients.

1.2. Patients admitted to the hospital that are currently being treated in an outpatient setting for opioid use disorder may be continued on their current maintenance therapy with methadone during their inpatient hospital stay.

1.2.1. The provider writing for methadone is not required to have a special certification or waiver other than their standard DEA number in the inpatient setting.

1.2.2. Providers should consider consultation with the Maternal Child Health team for methadone inductions during pregnancy

1.2.3. Providers are strongly encouraged to attend training sessions relating to prescribing methadone during pregnancy

1.3. Methadone may be administered in OB Triage by a registered nurse acting upon the order of an authorized physician under the “three-day rule” provided that the patient meets the following criteria:

1.3.1. Patient meets eligibility requirements in *section 2.1*

AND

1.3.1.1.Patient seen for a non-OUD indication who requires continuation of methadone therapy, verified through the patient’s Narcotic Treatment Program (NTP).

OR

1.3.1.2.Patient recently discharged from an inpatient methadone induction at UNM Hospital to serve as a bridge between discharge and NTP intake (such as over a weekend or holiday)

2. **Patient eligibility**

2.1. Obstetric inpatient methadone induction is limited to the following:

2.1.1. Positive pregnancy test or within 6 weeks postpartum

2.1.2. Elects to pursue methadone therapy after appropriate counseling (*see section 3*)

2.1.3. Opioid dependent

2.1.4. Medically stable

2.1.5. Prior to discharge, patient has scheduled NTP intake or arrangements are made to continue receiving treatment at an NTP

2.1.6. Willing and able to be seen for prenatal care at UNM Milagro clinic OR other outpatient prenatal care clinic able to manage OUD during pregnancy

2.2. Use with caution in:

2.2.1. Severe psychiatric illness

2.2.2. Concomitant ethanol or benzodiazepine use disorder.

2.2.3. Acute or chronic hepatic disease with evidence of significant hepatic dysfunction

2.2.4. Patients who require opioids for pain management

2.2.5. History of prolonged QTc>500 ms

2.2.6. Anticipated acute pain requiring opioid agonist therapy or surgery in the next 48 hours, including cesarean delivery

3. **Patient Counseling and Education**

3.1. Patients should be counseled on the following:

3.1.1. Explanation of benefits and risks of methadone in pregnancy for OUD with regards to maternal and newborn issues

3.1.2. Comparison of methadone and buprenorphine for OUD in pregnancy

3.1.3. Provide patient information on methadone treatment

3.1.4. Review risks of overdose, harm reduction strategies with intranasal naloxone and increased risk of overdose with use of benzodiazepine, ethanol or other medications

3.1.5. Patients are strongly encouraged to engage in substance use disorder counseling, keep scheduled prenatal appointments, submit periodic urine drug screening assays, and take medications as prescribed.

3.1.6. Neonatal opioid withdrawal syndrome (NOWS) and the need for neonatal observation after birth, which may result in prolonged hospital stay.

3.1.7. Discuss safety of breastfeeding on methadone and potential reduction in NOWS.

4. Patient Assessment

4.1. Prior to methadone induction, providers should complete the following screenings and assessments:

4.1.1. Review history of substance use and review NM Prescription Monitoring Program (*PMP*).

4.1.2. Obtain verbal consent for urine drug screening and place order for "Urine Drug Screen" *(UDSCN).*

4.1.2.1. If UDSCN is positive for non-opioid substances or if assay is inconsistent with patient screening or assessment, order "Urine Drug Screen, with Reflux to Confirmations (*UDSCNR*).

4.1.2.2. Providers may order "Rapid Urine Drug Assessment 6" (RUDA6) AND "Urine fentanyl" (UFEN) if more rapid screening is indicated.

4.1.3. Obtain baseline COWS (Clinical Opioid Withdrawal Scale) assessment (*see appendix C*) with baseline vital signs, including blood pressure, heart rate, oxygen saturation, respiratory rate and Ramsey score

4.1.4. Consider placing all patients on continuous pulse oximetry monitoring if available

4.1.5. Perform non-stress test (NST) if patient is ≥ 23 weeks gestation or fetal heart tones if patient is < 22 weeks.

4.1.6. Place ad-hoc for dating ultrasound as appropriate based on ultrasound history and gestational age.

4.1.6.1. For patients < 18 weeks gestation, perform an anatomic survey

4.1.6.2. For patients ≥ 26 weeks gestation, assess fetal growth to rule out fetal growth restriction and assess amniotic fluid to rule out oligohydramnios if not performed within the last 4 weeks.

4.1.6.3. Ultrasound does not need to be completed prior to methadone induction start

4.1.7. Obtain the following labs (but do not necessarily need to result prior to methadone induction):

4.1.7.1. Routine labs contingent to standard obstetric care

4.1.7.2. Liver function test

4.1.8. An EKG should be performed within 48 hours of admission and does not need to be performed prior to methadone induction

4.1.8.1. If QTc>500 ms, consider holding all QTc prolonging medications, replace potassium and magnesium and repeat EKG in 24 hours

4.1.8.2. If QTc<500 ms, continue therapy and only repeat EKG if clinically indicated

5. **Methadone in OB Triage**

5.1. Patients that have been recently discharged from an inpatient methadone induction at UNMH or seen for a non-OUD indication who requires continuation of methadone therapy may be dosed in OB Triage contingent to the “three-day rule” *CFR 1306.07 Administering or dispensing of narcotic drugs*.

5.1.1. This regulation allows the administration of narcotic drugs to a person for the purpose of relieving acute withdrawal symptoms when necessary while arrangements are being made for referral for treatment.

5.1.2. Such emergency treatment may be carried out for no more than three days and may not be renewed or extended.

5.1.3. Patients may only receive one day’s medication at one time

5.2. Contingent to 21 W.S.C 802(3), registered nurses acting upon the order of an authorized physician can administer methadone under the “three-day rule” outside of a narcotic treatment program.

6. Inpatient Methadone Induction Steps

6.1. The admitting provider will select one of the following methadone induction pathways contingent to initial patient assessment, opioid utilization and decision on once daily or twice daily methadone administration based on outpatient disposition.

6.1.1. The *OB Rapid Methadone Induction (see appendix A)* may be considered for patients with all of the following:

6.1.1.1.High utilization of opioids

6.1.1.2.Without concomitant alcohol or benzodiazepine use disorder

6.1.1.3. Who are able to receive methadone from an NTP willing to administer twice daily therapy

6.1.1.4. Consultation with the MCH fellow or Milagro attending is encouraged

6.1.1.5. Continuous pulse oximetry monitoring is encouraged

6.1.2. The *OB Methadone Induction (see pathway B)* may be considered for any patient meeting criteria in *section 2.1* based on provider determination

7. Monitoring

7.1. COWS assessment (*see appendix C*) and vital signs, including blood pressure, heart rate, oxygen saturation, and respiratory rate, will be performed by a registered nurse prior to administration of the first dose of methadone and a minimum of every 4 hours while the patient is awake.

7.1.1. More frequent monitoring may be indicated based on provider assessment

7.1.2. COWS assessment and vital signs will be documented in the Interactive View.

7.1.3. COWS assessment may be discontinued when the patient is at goal dose AND COWS assessment <5 for at least 24 hours.

7.2. Fetal non-stress test (NST) monitoring should be performed at least once a day for patients with gestational age >23 weeks.

7.3. Patients with COWS assessment >20 AND gestational age >23 weeks should have an NST performed shortly after assessment and should consider continuous fetal monitoring until the patient is stable.

7.3.1. Patients with fetal growth restriction, oligohydramnios or non-reassuring fetal heart tracing may require continuous fetal monitoring during methadone induction, determined by MCH Fellow or Milagro Attending consultation.

8. Goals of treatment

8.1. To induce a patient to goal dose methadone while mitigating withdrawal symptoms

8.2. Elimination of opioid hunger and cravings

8.3. Minimize sedation

8.4. Avoid respiratory depression (respiratory rate <12 respirations per minutes)

9. Discharge Considerations

9.1. Patients may be considered for discharge when:

9.1.1. Patient is at goal dose of methadone

9.1.2. COWS score is <5 for at least 12 hours

9.1.3. Discharge is appropriate from obstetric and clinical assessment

9.2. Providers must schedule NTP intake or arrangements are made to continue receiving treatment at an NTP.

9.3. The patient should have a prenatal follow up appointment scheduled within 7 days of discharge.

9.4.Co-prescribe intranasal naloxone for all patients on methadone.

9.5. Breast/chestfeeding should be encouraged for postpartum patients on methadone who are not using illicit substances to decrease severity of NOWS.

9.6. Create a Plan of Safe Care (POSC) with families and caregivers with an infant with NOWS prior to discharge in collaboration with social work and providers. *https://sharenm.s3.amazonaws.com/library/Et45BmyS4jvltBWsuv3SI18j2ovOX4IAg9YBlVpO.pdf*

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OB Rapid Methadone Induction

1. The *OB Rapid Methadone Induction* Pathway is intended for patients with:

1.1. Meeting patient eligibility criteria noted in *section 2.1*

1.2. Agree and able to follow up at UNM Alcohol and Substance Abuse Program (ASAP) or other NPT able to dose methadone twice a day

1.3. Without an alcohol use disorder or requires chronic benzodiazepines

1.4.Are there any other restrictions?

2. Consultation with MCH fellow or Milagro attending is encouraged

3. The objective of this pathway is to titrate methadone up to a sufficient twice daily dosing to maintain COWS assessment <5 for at least 24 hours

4. COWS assessment and vital signs, including blood pressure, heart rate, oxygen saturation, and respiratory rate, will be performed by a registered nurse prior to administration of the first dose of methadone and at a minimum of every 4 hours while the patient is awake.

4.1. COWS assessment may be discontinued when the patient is at goal dose AND COWS assessment <5 for at least 24 hours.

5. Methadone administration during this pathway should not be deferred for low COWS assessment or somnolence as long as respiratory rate >12 respirations per minute.

6. Patients who develop moderate to severe withdrawal symptoms during this pathway, demonstrated by COWS assessment >12, should be considered for consultation with MCH Fellow or Milagro Attending through PALS.

OB Methadone Rapid Titration Pathway A

Day 1:

1. Obtain baseline COWS assessment and vital signs

2. Administer methadone 40 mg tablet once

Assess COWS assessment and vital signs every 4 hours

4. For increasing COWS assessment at least three hours from previous methadone dose, administer methadone 20 mg once

Assess COWS assessment and vital signs every 4 hours

Administer oxycodone 5 mg every 6 hours PRN for increasing COWS assessment, not ithin 3 hours of methadone dose. Maximum of 2 doses within 24 hours

Day 2:

7. Obtain COWS assessment and vital signs

8. Administer methadone 60 mg tablet once at least three hours after last methadone dose and 24 hours from first dose of methadone

Assess COWS assessment and vital signs every 4 hours

10. For increasing COWS assessment, at least three hours from previous methadone dose, administer methadone 10 mg once

1. Assess COWS assessment and vital signs every 4 hours

2. Administer oxycodone 5 mg every 6 hours PRN for increasing COWS assessment, not ithin 3 hours of methadone dose. Maximum of 2 doses within 24 hours

Day 3:

13. Obtain COWS assessment and vital signs

14. Administer methadone 40 mg every 12 hours starting at least three hours after last methadone dose and 24 hours from methadone 60 mg dose

5. Assess COWS assessment and vital signs every 4 hours

16. For increasing COWS assessment at least three hours after last methadone, administer methadone 10 mg once

17. Oxycodone administration order should be discontinued 48 hours after first dose of methadone

Day 4 and beyond

3. Based on provider assessment, provider will continue previous day's methadone dose OR crease dose by 5-10 mg twice a day until COWS assessment is <5 for 24 hours

9. Assess COWS assessment every 4 hours until COWS assessment is <5 for 24 hours

0. Prior to discharge, the provider must schedule NTP intake or arrangements are made to ontinue receiving treatment at an NTP and have prenatal follow up appointment scheduled ithin 7 days of discharge.

OB Methadone Titration

1. The *OB Methadone Induction* Pathway is intended for patients with:

6.1. Meeting patient eligibility criteria noted in section 2.1

6.2.Other things……

7. The objective of this pathway is to titrate methadone up to a sufficient once daily dosing to maintain COWS assessment <5 for at least 24 hours

8. COWS assessment and vital signs, including blood pressure, heart rate, oxygen saturation, and respiratory rate, will be performed by a registered nurse prior to administration of the first dose of methadone and at a minimum of every 4 hours while the patient is awake.

8.1. COWS assessment may be discontinued when the patient is at goal dose AND COWS assessment <5 for at least 24 hours.

9. Methadone administration during this pathway should not be deferred for low COWS assessment or somnolence as long as respiratory rate >12 respirations per minute.

10. Patients who develop moderate to severe withdrawal symptoms during this pathway, demonstrated by COWS assessment >12, should be considered for consultation with MCH Fellow or Milagro Attending through PALS.

OB Methadone Titration Pathway B

Day 1:

1. Obtain baseline COWS assessment and vital signs

2. Administer methadone 40 mg once

3. Assess COWS assessment and vital signs every 4 hours

4. For increasing COWS assessment or COWS>8, at least three hours from previous methadone dose, administer methadone 10 mg once

5. Assess COWS assessment and vital signs every 4 hours

6. For increasing COWS assessment or COWS>8, at least three hours from previous methadone dose, administer methadone 10 mg once for a maximum of 60 mg in the first 24 hours

Day 2:

7. Obtain baseline COWS assessment and vital signs

8. Administer methadone 40 to 60 mg once based on total cumulative methadone dose from previous day

9. Assess COWS assessment and vital signs every 4 hours

10. For increasing COWS assessment or COWS>8, at least three hours from previous methadone dose, administer methadone 10 mg once

11. Assess COWS assessment and vital signs every 4 hours

12. For increasing COWS assessment or COWS>8, at least three hours from previous methadone dose, administer methadone 10 mg once for a maximum of 80 mg in the second 24 hours

Day 3:

13. Obtain COWS assessment and vital signs

14. Administer methadone 40 to 80 mg once based on total cumulative methadone dose from previous day

15. Assess COWS assessment and vital signs every 4 hours

16. For increasing COWS assessment or COWS>8, at least three hours from previous methadone dose, administer methadone 10 mg once

17. Assess COWS assessment and vital signs every 4 hours

18. For increasing COWS assessment or COWS>8, at least three hours from previous methadone dose, administer methadone 10 mg once for a maximum of 80 mg in the second 24 hours

Day 4 and beyond

19. Based on provider assessment, provider may continue previous day's methadone dose OR increase dose by 10 mg to 20 mg once a day

20. For increasing COWS assessment or COWS>8, at least three hours from previous methadone dose, administer methadone 10 mg once

21. Assess COWS assessment every 4 hours until COWS assessment is <5 for 24 hours

22. Prior to discharge, the provider must schedule NTP intake or arrangements are made to continue receiving treatment at an NTP and have a prenatal follow up appointment scheduled within 7 days of discharge.

TOC

LX. MILAGRO PRENATAL CARE (Substance use in pregnancy considerations)

Every Visit

- Vital signs including weight. Pulse ox and RR if respiratory symptoms.
- Review UDM results. Consider ordering Quick Tox (point of care UDM) if previous UDMs are positive.
- Discuss counseling, screen for depression

Initial Prenatal Visit

- Dating ultrasound
- Offer genetic testing

- Order prenatal labs if not already done
- Order LFTs
- Check HCV PCR if HCV positive
- Order Prenatal vitamins with 1g of folic acid
- Discuss counseling requirements and help enroll in counseling. Emphasize that counseling may not occur at time or place as prenatal appointments.
- Discuss NAS and 96 hour observation after birth

16-24 weeks
- Fetal anatomic survey ultrasound 18-20 weeks
- Second trimester counseling and breast/chestfeeding packet
- Obtain op reports for c-section patients and start TOLAC discussion

24-28 weeks:
- Diabetic screen (GS1), Hct & Hgb, and repeat TPAB
- Growth ultrasound #1 at 28 weeks
- If Rh neg, RhoGam work-up
- Buprenorphine metabolites if on Subutex
- BTL counseling and consent form (copy to scan and copy to patient)
- Discuss Contraception
- Offer childbirth education classes

32 weeks:
- Start antenatal surveillance once a week if ongoing stimulant use
- Start antenatal surveillance 2x weekly for other medical indications (GDM, etc)
- Discuss newborn provider (FOCUS). If not going to FOCUS discuss finding a new suboxone provider for postpartum
- Discuss breast/chestfeeding and substance use. Give information on breast/chestfeeding FirstDroplets

34 weeks:
- Growth US #2 at 34 weeks

36-37 weeks:
- Start HSV prophylaxis if indicated
- GBS swab unless already known + in urine
- Consider repeating HIV, TPAB, GC/CT if high risk; HCV viral load if negative previously to confirm
- Confirm presentation
- Remind of 96-hour neonatal withdrawal observation period
- Re-discuss breast/chestfeeding
- Confirm newborn provider/ FOCUS referral
- IOL at 38 weeks if ongoing stimulant use due to risk of abruption

Postpartum:
- Edinburgh Postpartum Depression Scale
- Address hep C treatment plan

LXI. BREAST/ CHESTFEEDING FOR PATIENTS WITH SUBSTANCE USE DISORDERS

Encourage to Breast/chestfeed	Counsel No Breast/chestfeeding	Careful Evaluation

Engaged in treatment program Stable on methadone or buprenorphine Plans to continue treatment Abstinent 90 days from delivery Negative urine screen Engaged and adherent to prenatal care	Not engaged in treatment Erratic prenatal care* Positive urine screen* No plans for treatment Relapse within 30 days* Chronic alcohol use	Relapse in last 30-90 days Late prenatal care Only sober while inpatient

These are general recommendations based and must be individualized. Infants should have the right to human milk despite moral conflicts society may have with behaviors of gestational parents. It is important to remember that whatever recommendation is made about breast/chestfeeding, it is done *not to be punitive to* patients *with substance use disorders, but to protect infants from any possible harm from substance exposure*. Due to the risks of non-prescribed substances in human milk to an infant, it should not be given if the gestational parent is actively using illicit substances in the last 72 hours.

In patients that are not in category 1 (encourage breast/chestfeeding), extensive counseling and discussion about the risks to infants of exposure to substances in human milk should be done (as there are case reports of infants dying from meth transfer in human milk) and this should be documented in the chart. If the attending feels it is reasonable for the patient to breast/chestfeed after this discussion, an order can be written that it is acceptable to breast/chestfeed.

Breastfeeding and Use of Expressed Human Milk in the Setting of Substance Use, Infectious Disease, and/or Use of Medications

DESCRIPTION/OVERVIEW

Human milk provides a range of benefits for babies, including optimal nutrition and infection-fighting compounds. Direct breast/chestfeeding provides a special opportunity for bonding. However, in situations of parental substance use, infectious disease, or use of specific medications, human milk feeding may cause more harm to the baby than good.

This guideline is intended to promote a consistent approach to infant feeding. It is intended to provide guidance and promote collaboration between infant and parent providers in order to reach decisions on infant feeding that best meet the individual needs of each family. It is a guideline and as such, providers should continue to use clinical judgment when making final decisions for individual patients.

"Breastfeeding/Human milk feeding" refers to milk given to an infant by their parent either directly or via expression. It does not include donor milk.

GUIDELINE

1) **<u>Shared decision-making and marijuana.</u>**

a) Shared decision-making (SDM) about infant feeding for every pregnant patient ideally takes place during the prenatal period with a continuity prenatal care provider. During this time, the pregnant patient, their support person(s), and the prenatal care provider can share relevant information about the benefits and risks of breastfeeding/human milk feeding or formula feeding based on each pregnant patient's circumstances.

b) Prenatal care providers should provide counseling regarding potential effects of marijuana use during pregnancy and breast/chestfeeding to all patients who are pregnant or who are trying to become pregnant.

c) The handout Information about Using Marijuana While Pregnant or Breast/chestfeeding will be included in all new pregnant patient's packets.

d) In light of recent legislation legalizing marijuana use, it is particularly important that pregnant and postpartum people and providers engage in SDM to come to a decision about infant feeding in the following circumstances:

i) If a pregnant or postpartum patient has had a UDM positive for marijuana during pregnancy or at the time of delivery

ii) And/or if a patient reports use of marijuana while pregnant or intent to use marijuana while breast/chestfeeding.

iii) For purposes of SDM, no distinction can be made between prescribed and recreational use of marijuana. Legality of marijuana use is not relevant.

e) SDM will include the following:

i) Providers will seek to learn the reason for a patient's decision to use marijuana while pregnant or breastfeeding. In the case of marijuana use for therapeutic reasons, information about other potential therapies will be provided.

ii) Providers will counsel patients about the known potential negative effects on children of using marijuana while pregnant, including increased risks of:

(1) stillbirth,

(2) low birth weight,

(3) memory and learning problems,

(4) problems with attention and impulsivity, and

(5) depression and anxiety.

iii) The following information can be valuable to parents. While it is difficult to tease apart effects of using marijuana while pregnant versus while breast/chestfeeding or providing human milk, evidence shows that:

(1) babies' brains continue to develop after birth,

(2) THC, the active ingredient of marijuana, concentrates in fatty substances including breast/human milk and babies' brains and remains for a long time (> 6 weeks), and

(3) the amount of THC in breast/human milk is up to 6-8 times as high as the amount of THC in the blood.

(4) Most studies looking at the effects of using marijuana while pregnant or breast/chestfeeding were done when marijuana was much less potent and so potential negative effects may be increased with current marijuana products.

(5) We do not know exactly how much THC from breast/human milk will enter the baby's bloodstream. Bioavailability is estimated to be between 4-12%.

(6) THC lowers maternal levels of prolactin and oxytocin so may affect breast/ human milk supply.

(7) There is a lot of ongoing research about marijuana so we expect new information to be coming out regularly, which could affect our advice during future pregnancies, or even during your current pregnancy.

iv) Providers will counsel patients about the risks of anyone smoking marijuana around their babies, including an increased risk of SIDS (sudden infant death syndrome).

v) Providers will counsel patients about the fact that using marijuana may sedate them or impair their ability to care for their child so it is important to ensure there is always an unimpaired adult caregiver who is able to care for their child.

vi) Providers will encourage patients to quit using marijuana or reduce their use as much as possible if they choose to breast/chestfeed.

f) The pregnant patient's provider will clearly document in the pregnant patient's problem list the date(s) that SDM was employed and the plan for infant feeding (breastfeeding/ human milk or formula or any combination of the two).

g) The baby's provider will also clearly document SDM in the baby's chart and place an order in the baby's chart letting nursing staff know that the baby may breast/chestfeed or that the gestational parent has decided to formula feed instead.

2) **Breastfeeding/human milk feeding and substances other than marijuana.**

a) **Presumption in favor of breast/chestfeeding.**

i) When nursing is unsure whether to encourage a patient to breast/chestfeed due to substance use, the presumption should be to allow patient to breast/chestfeed while awaiting further guidance from baby's provider(s) **except** in the following circumstances:

(1) Patient admits to ongoing or recent (within 30 days of birth) use of cocaine, amphetamines, PCP, or Fentanyl.

ii) Patient has a drug screen positive for cocaine, amphetamines, PCP, or Fentanyl within 30 days of birth, but not including a UDM positive only for Fentanyl AND collected after the gestational parent was given Fentanyl during labor.

iii) When allowing a patient to breast/chestfeed pending further clarification by baby's provider(s) nursing should:

(1) Reach out to the baby's provider(s) during their regular working hours to discuss the question of whether the patient should be encouraged to breast/chestfeed based on their substance use and/or positive drug screen, and

(2) Let the patient know the baby's provider(s) may recommend the patient not breast/chestfeed later.

b) **Breastfeeding/human milk feeding is encouraged under the following circumstances**:

i) The Parent providing milk is actively participating in a substance use disorder treatment program (for example, Milagro). With consent, participation in a treatment program should be verified by chart review and/or by direct communication with prenatal providers or the substance use disorder treatment program. The following should be verified:

(1) If the parent providing milk is on opiate replacement therapy (ORT) (methadone or buprenorphine), the parent has been stable on ORT for at least 90 days without any known relapses.

(2) If performed, urine drug tests during the 90 days before giving birth have been positive only for prescribed substances or marijuana.

(3) Following the baby's birth, any urine drug tests performed have been positive only for prescribed substances or marijuana.

ii) The Pregnant person quit using illicit substances or prescribed narcotics (other than ORT) when they learned of pregnancy, began receiving prenatal care before the 3rd trimester, had at least 6 prenatal visits, and any urine drug screens obtained are negative for all substances other than marijuana (see above regarding SDM and marijuana use) or ORT.

iii) Breast/chestfeeding is an integral part of ESC (Eat, Sleep, Console) treatment for babies with in utero opiate exposure when the above criteria have been met and has been shown to:

(1) Decrease the incidence of NOWS,

(2) Decrease the amount and duration of medication treatment,

(3) Decrease the length of stay for babies with in utero opiate exposure.

c) **Breast/chestfeeding may or may not be supported <u>in</u> the following circumstances. Shared decision making will be employed with a focus on education about risks and benefits of breast/chestfeeding or formula feeding:**

i) Pregnant person confirms use of or has a urine drug test positive for illicit substance(s) that were not prescribed to her 30-90 days before giving birth.

ii) There is a documented history of substance use and no prenatal care or entry into prenatal care after 20 weeks.

iii) There are negative UDMs in 90 days prior to delivery but the pregnant parent was hospitalized or incarcerated throughout that time.

iv) The SDM process will include the postpartum parent and their support person(s) (at the parent's discretion) and providers for both parent and baby. Representatives from the parent's substance use treatment program and lactation nurse may also be included, with parent's consent. During this conversation, all persons will participate, sharing relevant information to make an informed decision about infant feeding. The decision (consensus or non-consensus) will be clearly documented in the infant's medical record.

(a) Parent's provider will clearly document in the parent's chart whether or not breast/chestfeeding will be supported at the present time.

(b) Baby's provider will write an order specifying whether breast/chestfeeding/ or receiving expressed human milk from the parent is supported at the present time.

d) **Breast/chest feeding/expressed milk feeding is <u>contraindicated</u> under the following circumstances:**

i) Parent providing milk admits to using or has a urine drug test positive for cocaine, amphetamines, methamphetamines, PCP, or Fentanyl during the 30 days before giving birth or at the time of delivery, but not including a UDM positive only for Fentanyl AND collected after the gestational parent was given Fentanyl during labor.

ii) Documentation:

(1) Baby's provider will clearly document in baby's daily progress note that breast/chestfeeding will not be supported at the present time.

(2) Baby's provider will write an order specifying that breastfeeding/receiving parent's expressed human milk is not supported at the present time.

3) <u>CARA (2016 Comprehensive Addiction and Recovery Act)</u>

1. Federal and New Mexico State law require that hospitals
    1. Offer support through a Plan of Care to individuals who disclose use of alcohol or drugs, including prescribed substances, during their pregnancy.
    2. Notify CYFD if a baby is born with substance exposure **AND** there are specific and immediate concerns about a newborn's safety, beyond the substance exposure.
2. In order to comply with State and Federal law, health care providers should notify social work when
    1. A pregnant or postpartum parent discloses substance use during the pregnancy, even if they quit during the pregnancy.
    2. A pregnant or postpartum parent or baby has a positive urine drug screen, even if the parent denies use of the substance and a confirmatory test is pending at the time of the baby's discharge.
3. The social worker will offer a Plan of Care (POC) to the parent.
    1. Participation in a Plan of Care is voluntary.
        1. If a parent does consent to participate in a POC, the POC is sent to CARA/DOH and CYFD.
        2. If a parent declines to participate in a CARA POC, a "CARA Notification of Newborn Status" must be completed and sent to CARA/DOH and CYFD.
    2. Notification of CYFD under CARA does "not constitute a report of suspected child abuse and neglect."

4. The medical provider will follow up on pending confirmatory drug tests and notify the parent and social work with results.

4) Infectious Diseases

a) Postpartum parent should **NOT** breast/chestfeed or feed their expressed milk to her baby if they are positive for **HIV** (Human Immunodeficiency Virus).

b) Postpartum parent should temporarily **NOT** breast/chestfeed and should **NOT** feed their expressed milk to their baby if they have an active **HSV** (Herpes Simplex Virus) infection with lesion(s) present on their breast/chest It is acceptable to breast/chestfeed directly from the unaffected side if lesion(s) on the affected areas are covered completely to avoid transmission.

c) If the postpartum parent is positive for **Hepatitis B or C,** it is recommended that they breas/chestfeed.

i) Babies whose postpartum parent is positive for Hepatitis B should receive Hep B vaccine and HBIG within 12 hours of birth and do not need to interrupt breast/ chest feeding for cracked or bleeding nipples.

ii) If a postpartum parent is positive for Hepatitis C and has cracked or bleeding nipples, they should express and discard their milk from the affected breast/chest(s). If only one side is affected, then they can still breast/chestfeed or feed expressed milk from the unaffected side. Once the affected nipple(s) is/are healed, they can resume breast/chest feeding/human milk feeding from the affected side(s).

d) See Lippincott Procedures for all other questions regarding breast/chestfeeding and infectious diseases.

5) Medications

a) Most **medications** are compatible with breast/chestfeeding. However, there are some medications, including those used in chemotherapy, that may be contraindicated with breast/ chest feeding. In situations where these medications are needed for postpartum parent's health, temporary or permanent cessation of breast/chestfeeding may be advised.

b) Before counseling on the safety of **specific** medications while breast/chestfeeding/expressed milk feeding, check for updated safety recommendations via LactMed (Drugs and Lactation Database (LactMed®) - NCBI Bookshelf) and/or the Infant Risk Center (http://infantrisk.com).

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Transfer of Methamphetamine (MA) into Breast Milk and Urine of Postpartum Women who Smoked MA Tablets during Pregnancy
*If possible link to protocol
A Right to Mother's Milk: A Call for Social Justice That Encourages Breastfeeding for Women Receiving MAT for OUD

Studies on Breast/chest feeding in patients in the UNM Milagro Clinic

- Breastfeeding Intention Compared with Breastfeeding Postpartum Among Women Receiving MAT

- Breastfeeding Motivators and Barriers in Women Receiving Medications for OUD

LXII. NEONATAL OPIOID WITHDRAWAL SYNDROME (NOWS)

A. Care:
   1. Monitor all infants exposed to opioids for a minimum of 96 hours for NOWS symptoms.
   2. Order 22 kcal formula if infant is formula feeding due to the increased metabolic demands of NOWS.
   3. Consult speech if having issues with feeding to create a feeding plan.
   4. Do not increase to 24 kcal formula unless continued weight loss AND the baby is taking adequate volume. If a baby is not able to take adequate volume, transfer to the ICN is recommended for nasogastric gavage feeds.

B. Nonpharmacologic treatment of NOWS
   1. Swaddling, soft music, gentle rocking/swaying
   2. Low stimulation environment – minimize light and noise, keep TV volume low, limit care to when baby is awake
   3. Pacifier use
   4. Kangaroo care/skin to skin
   5. Rooming-in instead of NICU admission decreases the need for pharmacologic treatment
   6. Breast/chest feeding

C. Pharmacologic treatment
   - Morphine or methadone are used at UNM. Clonidine can be used as an adjunct for difficulty weaning. If a baby needs clonidine they need to be in the ICN/NICU.

D. Risk factors for needing pharmacologic treatment include the following:
   - Term infants, Polysubstance exposure, Concurrent benzodiazepine exposure use, Male sex, Tobacco exposure, Maternal SSRI use

E. Discharge Planning
   1. Infant has not had methadone or morphine in 48 hours.
   2. Infant is feeding well.
   3. Weight is stable and not below ~10%. If the baby has been regularly losing weight, hold discharge until weight is stable/gaining and feeding is improved to avoid re-admission.
   4. Safe discharge plan has been made with social work and CYFD if indicated.
   5. Make sure caregivers have a written feeding plan in their discharge paperwork. For formula fed infants, this should include how many ounces of formula, how often they should feed, what calorie formula to mix. The nurses have handouts on mixing to 22 or 24 kcal. It's helpful if caregivers know how much formula to make for 24 hours so they can mix it once a day (formula lasts 24 hours in the refrigerator after mixing).

LXIII. SHORT ACTING MORPHINE FOR NEONATAL ABSTINENCE SYNDROME

Morphine Protocol

Initiation:
Nonpharmacologic measures should be increased as soon as elevated Eat, Sleep, Console (ESC) scores are noted and before initiating pharmacological treatment

Morphine should be initiated if the infant has elevated ESC scores.
Morphine may be given prn initially.

1. **Order morphine 0.05 mg/kg** (morphine solution is 0.04mg/0.1ml)
    - Reassess infant in 3-4 hours after the first dose
    - If the score is still > 8, give another 0.05 mg/kg morphine dose.
2. If an infant requires > 2 doses in a 24-hour period, the infant should be started on scheduled morphine at **0.05 mg/kg/dose po q 3 hours**.
3. If the Finnegan score continues to be > 8 or other significant concerns:
    - Increase morphine dose by 0.01 mg/kg/dose
4. **The maximum morphine dose is 0.2 mg/kg/dose po q 3 hours**. *If the maximum dose of morphine is reached, switch to scheduled methadone dosing.*
5. In the setting of escalating doses of morphine, the attending physician may choose to change to scheduled methadone at any time.

Weaning:
If ESC scores 0 for 24 hours, wean morphine by 0.04 mg/dose. May wean up to 3 times per day if the baby is doing well.

All infants should be monitored in the hospital for 48 hours after stopping morphine.

References
For more detailed information please use the following link :
https://procedures.lww.com/lnp/view.do?pId=3462917&hits=abstinence

LXIV. METHADONE AND CLONIDINE PROTOCOL for NOWS

Initiation of Methadone for NOWS: Dosing protocol

Step	Methadone Dose	Dosing Interval	Number of Doses
1	0.1 mg/kg	Q 6 hours	4
2	0.07 mg/kg	Q 12 hours	2
3	0.05 mg/kg	Q 12 hours	2
4	0.04 mg/kg	Q 12 hours	2
5	0.03 mg/kg	Q 12 hours	2
6	0.02 mg/kg	Q 12 hours	2
7	0.01 mg/kg	Q 12 hours	2
8	0.01 mg/kg	Q 24 hours	1

Weaning

- Wean to the next step if the average ESC score is 0 for the past 24 hours.
- If the average ESC score is 2-3, do not wean.
- If the average ESC score is 3, consider an extra dose of methadone at the current step, or return to the previous step.
- All infants should be observed for 48 hours off of methadone prior to discharge.

Escalation

- If the patient fails step 1, consider steps 1A through 1C (below).
- Escalation Dosing

Step	Methadone Dose	Dosing Interval	Number of Doses
1A	0.1 mg/kg	Q 4 hours	6
1B	0.1 mg/kg	Q 8 hours	3
1C	0.1 mg/kg	Q 12 hours	2

Adjunct Therapy – **Transfer infant to ZIA/ICN**

- Consider adding clonidine if unable to wean for 3 consecutive days or if the patient has not reached Step 3 of methadone protocol and the patient continues to meet criteria for a “YES” response to ESC criteria.
- Initial dosing:
  - PO clonidine 1 mcg/kg q 4 hours
- Continue current dose of methadone when clonidine is started
- Once ESC scores have decreased to 0 for 24 hours, resume the methadone weaning protocol as shown above.

- Weaning:

- Start weaning clonidine once the patient has completed methadone wean and methadone has been discontinued for 24 hours.
- Weaning steps:
  - Decrease to 1 mcg/kg/dose PO q 6 hours for 4 doses (24 hours)
  - Then decrease to 1 mcg/kg/dose PO q 8 hours for 3 doses (24 hours)
  - Then decrease to 1 mcg/kg/dose PO q 12 hours for 2 doses (24 hours)
  - Then discontinue clonidine
- Hold wean if infant demonstrates uncontrolled withdrawal symptoms and consistently meets criteria for a “YES” response to ESC criteria OR hold wean if infant demonstrates uncontrolled withdrawal symptoms.
- Monitor for rebound hypertension and tachycardia after clonidine is discontinued, however, these are rare findings.

TOC ♿

LXV. BREAST/ CHESTFEEDING

- Please see UNM FM wiki for excellent resources on breast/chestfeeding.
- Watch videos on FirstDroplets and tell your patients about this resource. It provides great preparation for breast/ chestfeeding.
- Review the videos and protocols from the Stanford Newborn Website.
- Schedule patients in the lactation clinic 505-272-0480.
- Consult Pediatric and FM faculty for ankyloglossia to discuss the option of frenotomy if needed.

TOC ♿

LXVI. MCH BETA BOOK

The MCH service has a “Beta Book” that is used to track patients with spontaneous abortions (SAB), pregnancies of unknown locations (PUL), and ectopic pregnancies.

The MCH senior fellow will manage this book under the supervision of an FMOB attending, in consultation with OB/GYN Family Planning as needed.

Patients should be added to the Beta Book if they are seen in OB triage, continuity clinic, or any patient cared for by the MCH team.

How to Add a Patient to the MCH Beta Book

- The Beta “Book” can be accessed as a Care Team patient list, just like the MCH Care Team and MCH Follow-up team lists.
- The resident seeing the patient in triage or clinic should add the patient to the MCH Beta Book list.
- Please make sure you have the correct patient phone number and alternative contact number in a note.
- Send a message to the senior MCH fellow.

LXVII. EVALUATION AND MANAGEMENT OF FIRST TRIMESTER BLEEDING IN TRIAGE

A. Evaluation of first trimester bleeding in OB triage

1. **Evaluation of the unstable patient**
    a. **Check vital signs closely for signs of hypovolemia** (tachycardia and/or hypotension) or clinically significant bleeding (large amount of blood seen on bed, floor, clothing, etc)
    b. 1st trimester bleeding can be life threatening for patients with SAB with hemorrhage or ectopic pregnancies just like a postpartum hemorrhage.
    c. If a patient has significant hemorrhage and/or signs of hypovolemia:
        i. Contact MCH fellow and OB/GYN and check the stability of the patient.
        ii. Place 1-2 PIVs
        iii. Order 1000 mL LR fluid bolus
        iv. Order type and cross
        v. Give misoprostol 800 mcg SL +/- methergine 0.2 mg IM depending on clinical situation.

d. Significant hemorrhage from SAB will usually require emergent intervention with manual vacuum aspiration (MVA) or electric vacuum aspiration (EVA). Unstable ectopic pregnancy will require surgery.
e. Patients may need a blood transfusion due to significant blood loss.

2. Perform a complete physical exam making sure to include the following:
    a. Pelvic exam to evaluate quantity and velocity of vaginal bleeding. Look for products of conception (POCs) or a dilated cervical os. If POCs are seen in os, remove them with a ring forceps.
        i. Collect any tissue to float and/or send to pathology or for genetic testing.
    b. Abdominal exam to evaluate for peritoneal signs

3. Order labs: CBC, B-hCG, and type and screen. This will likely be automatically done before you see the patient per a Triage Nurse Initiated Protocol (NIP).

2. Ultrasound to locate the pregnancy
    a. If the MCH attending is not credentialed, the FMOB or the OB/GYN team can be consulted for assistance. The patient can also be sent to DI initially if there is no one available to do an ultrasound in triage.
    b. We can "rule in" an IUP but can't "rule out" an ectopic pregnancy in an US in triage.
    c. **If an IUP is not confirmed on the US in triage, order a DI ultrasound**.

This table reviews b-HCG levels that you expect to see a gestational sac, yolk sac, or fetal pole.

Table 2. Discriminatory and Threshold Values: Serum β-Human Chorionic Gonadotropin Levels

	Current Study (99% Predicted Probability of Detection, Milli-International Units/mL, Reported as Third International Standard)	Prior Studies[4–14] (Milli-International Units/mL Reported as First International Reference Preparation or Third International Standard)
Discriminatory values		
Gestational sac	3,510	1,000–2,000
Yolk sac	17,716	7,200
Fetal pole	47,685	5,100–10,800
Threshold values		
Gestational sac	390	500–1,000
Yolk sac	1,094	5,600
Fetal pole	1,394	24,000

Connolly 2013 Reevaluation of Discriminatory and Threshold Levels for Serum b-hCG in Early Pregnancy

TOC

Follow-up of the Stable Patient Based on Initial OB Triage Evaluation:

B. Vaginal Bleeding found to have a Viable IUP

1. If the patient is found to have a viable IUP with cardiac motion, do not follow serial hCGs. The patient can follow-up in the clinic with their prenatal provider as scheduled for desired pregnancies. Reassurance can be given. If the patient is at high risk for SAB, they could have another US for viability at CRH, Wed AM US clinic, or Women's Imaging. If pregnancy is undesired, refer to CRH for termination.

C. Pregnancy of Uncertain Viability (Yolk sac or embryo present)

1. If there is a yolk sac present or embryo without cardiac motion on ultrasound, refer to CRH or the Wed AM US clinic for a repeat US visit in 1 week to confirm viability. Except in very rare circumstances, *do not follow serial hCGs*. If pregnancy is undesired, can refer directly to CRH.

D. Spontaneous Abortions

1. How to Diagnose a Miscarriage by Ultrasound

Table 2. Guidelines for Transvaginal Ultrasonographic Diagnosis of Pregnancy Failure in a Woman with an Intrauterine Pregnancy of Uncertain Viability.*

Findings Diagnostic of Pregnancy Failure	Findings Suspicious for, but Not Diagnostic of, Pregnancy Failure†
Crown–rump length of ≥7 mm and no heartbeat	Crown–rump length of <7 mm and no heartbeat
Mean sac diameter of ≥25 mm and no embryo	Mean sac diameter of 16–24 mm and no embryo
Absence of embryo with heartbeat ≥2 wk after a scan that showed a gestational sac without a yolk sac	Absence of embryo with heartbeat 7–13 days after a scan that showed a gestational sac without a yolk sac
Absence of embryo with heartbeat ≥11 days after a scan that showed a gestational sac with a yolk sac	Absence of embryo with heartbeat 7–10 days after a scan that showed a gestational sac with a yolk sac
	Absence of embryo ≥6 wk after last menstrual period
	Empty amnion (amnion seen adjacent to yolk sac, with no visible embryo)
	Enlarged yolk sac (>7 mm)
	Small gestational sac in relation to the size of the embryo (<5 mm difference between mean sac diameter and crown–rump length)

Doubilet 2013 Diagnostic Criteria for Nonviable Pregnancy Early in the First Trimester

2. Management:
   a. Patient handouts on miscarriage management are available in OB triage and on the MCH Wiki Beta Book page.

   b. Counsel the patient on their options of expectant management, medication management (mifepristone with misoprostol), and surgical management at CRH
      i. D & C can be done on L&D in *very rare* scenarios to be determined by FMOB, CRH MCH faculty, or OB/GYN FM faculty in conjunction with L&D charge RN).

   c. Medical Management:

      i. **The paperwork/consent process is quite complex and should not be done without consultation with FMOB, CRH MCH faculty, or OB/GYN Family Planning to make sure the proper consents are completed, and patient instructions given.**
      ii. See the OB/GYN Family Planning Wiki Medical management of early pregnancy loss SOP to review the process and determine if the patient is a candidate for medical management.
      iii. If the patient is a candidate and medical management is desired, the patient should be offered these medications while in OB triage.
      iv. The consent forms and patient instructions are located on the UNM Family Planning Wiki Page under the Miscarriage Section.
      v. Follow-up for medical management can be arranged by Ad Hoc to CRH, at the FMC Ultrasound Clinic, or with their PCP depending on location and US availability. IHS patients can have an US for follow-up at their clinic so could potentially follow-up there if discussed with their prenatal care provider and preferred by the patient.

   d. Genetic testing
      i. Some patients with multiple prior SABs may want genetic testing on the POCs. POCs can be sent for microarray at the time of an aspiration procedure if desired by the patient. If she passes the pregnancy and has the POCs and they are fresh or were refrigerated, they can also be sent for microarray testing.

3. SAB Follow-up:
   a. Add the patient to the beta book per the above instructions to coordinate follow-up care.
   b. Contact the MCH fellow to discuss the plan during the hours of 7 am-10 pm.

c. After 10 pm, a PowerChart message should be sent to all MCH fellows on call to let them know the patient has been added to the beta book.

d. Follow-up can be arranged at CRH by Ad Hoc or 925-4455 for surgical or medical management, at the FMC Ultrasound Clinic (Ad Hoc or 272-3570), or with their PCP.

e. Patients with recurrent miscarriages should be discussed with FMOB and referred for further testing with APS panel, consideration of parental karyotype testing (PA required), hysteroscopy, and referral to MFM or REI

E. Ectopic Pregnancies

1. Read the ACOG Practice Bulletin 2018 on Ectopic Pregnancy on how to diagnose and manage ectopic pregnancies.
2. Ectopic pregnancies are rarely diagnosed with the first hCG level and ultrasound.
3. The MCH fellow and FMOB should be consulted for all suspected or diagnosed ectopic pregnancies. The OB/GYN Family Planning faculty and fellow will also be consulted.
4. All ectopic pregnancies need to be added to the MCH Beta Book.
5. The patient should be offered medical management with methotrexate if appropriate and surgical management. OB/GYN Family Planning can be consulted for assistance with counseling.
6. If methotrexate management is selected by the patient, follow the UNM SOP Methotrexate for Ectopic Pregnancy on the OB/GYN wiki for instructions on methotrexate administration, side effects, patients instructions, and follow-up.

    a. Methotrexate is administered by physicians, not RNs at UNM.
        i. OB/GYN/Family Planning can help if you are unfamiliar with the injection process.

    b. Day 1 is the day Methotrexate is given. For example:
        i. Day 1 = Monday - Methotrexate is given. Has baseline hCG, CBC, CMP.
        ii. Day 4 = Thursday – needs repeat hCG (hCG is often higher than day 1)
        iii. Day 7 = Sunday – needs repeat hCG

    c. There should be a > 15% decline between Day 4 and Day 7

    d. Follow hCG weekly until:
        i. < 50 if initial hCG was > 500
        ii. < 10 if initial level was < 500.

    e. *Remember – patients can still have a ruptured ectopic after methotrexate treatment. Reliable follow-up and review of warning signs for rupture are important.*

F. **Pregnancies of Unknown Location (PUL)**

PULs should always be managed with FMOB or OB/GYN Family Planning consultation

1. **Definition**:
   a. A PUL is diagnosed when a patient has a + hCG, but an IUP is not identified on the US. This means on the US there is no gestational sac or there is a gestational sac without a yolk sac or embryo.
   b. AT UNM, all patients without an IUP seen on the US in triage need to be sent for an ultrasound to rule out ectopic pregnancy.
   c. If the PUL is being seen at CRH for an undesired pregnancy, an aspiration can be performed without obtaining formal imaging. Review Very Early Abortion SOP.

2. **Differential diagnosis**:
   a. Patients with a PUL either have an early normal intrauterine pregnancy, SAB, or ectopic pregnancy (least likely because they are the least common).
   b. The history, physical exam, and ultrasound are important to help determine the diagnosis.
   c. An hCG above the discriminatory zone ~ 3500 abdominally or 2000 transvaginally, without a gestational sac is diagnostic of an abnormal pregnancy, either an ectopic or a passed SAB (based on the history). The patient will either need treatment for an ectopic or serial hCGs for likely SAB based on the clinical scenario.

3. **Management in OB Triage**:
   a. **Consult the MCH fellow and FMOB** to discuss the follow-up plan for all patients diagnosed with a PUL ***before they are discharged from triage!***
   b. OB/GYN Family Planning will be consulted as needed for PULs.
   c. All patients with PULs are added to the MCH Beta Book.
   d. Ask the patient for the best phone number and alternative phone number before discharge. Put this information in the note to facilitate follow-up.
   e. Give “ectopic precautions.” Counsel to return sooner if concerning signs/symptoms for ectopic pregnancy – worsening abdominal, pelvic, or referred shoulder pain, bleeding, lightheadedness, syncope.
   f. **Determine if this is a desired versus undesired pregnancy.**
      i. Undesired - If this is an undesired pregnancy, the patient can be referred for aspiration. At UNM, aspirations are done at CRH. Aspiration will also be

diagnostic of an IUP versus ectopic depending on if a gestational sac is seen or by following serial hCGs that drop by > 50% after the procedure.

ii. Desired - If the pregnancy is desired, in general the plan will be to repeat an hCG in 48 hours to see if it's rising appropriately. This can be done at any lab. In most cases, the patient does not need to come to triage to get this hCG drawn unless it's Sunday and she is unable to go to another open lab location.

g. The MCH Fellow and FMOB Beta Book faculty will follow-up the hCG result and contact the patient with the follow-up plan.

4. **What is an abnormal hCG rise?**
   a. Using an hCG rise of < 35% is a conservative estimate that is safe for diagnosing an abnormal pregnancy without harming a normal pregnancy. Most normal pregnancies will rise much more than 35%.
      i. How to calculate an hCG rise:

         (Value at 48 hours - Value at baseline) / Value at baseline

      ii. Example.
         hCG on Day 1 = 500
         hCG 48 hours later = 750
         (750-500)/500 = 50% = normal rise

5. Management of a an abnormally rising HCG in a desired pregnancy

a. A slow/abnormal rising hCG can represent either an ectopic pregnancy or a SAB (more likely a SAB).

b. If there is an abnormal rise, the patient should be referred for an aspiration to determine if she has an abnormal IUP or ectopic pregnancy.
   i. POCs are examined to see if a gestational sac is identified and are sent to pathology to confirm an IUP.
   ii. A repeat hCG can be done in 24 hours. It should drop by 50%. If the hCG does not drop by 50%, she should be sent to OB triage for evaluation of ectopic pregnancy.

c. Depending on the clinical situation and suspicion for ectopic pregnancy based on the history and ultrasound findings, the patient may be offered methotrexate

and/or surgery for ectopic without aspiration. The FMOB will determine the plan and will consult OB/GYN Family Planning as needed.

6. **Management of a normally rising hCG in a desired pregnancy**

    a. If the patient has no further worrisome symptoms, she can be scheduled for a repeat US in 1 week at CRH, FMC US clinic, or WI for viability.

TOC ♿

7. **Management of a decreasing hCG**

    a. Depending on the clinical scenario (history, ultrasound, hCG trends) and percentage hCG drop, a falling hCG could be a SAB or an ectopic.
    b. The FMOB will determine the follow up plan with the MCH fellow and will consult OB/GYN Family Planning as needed.
        i. If a SAB is thought to be the most likely diagnosis, the hCGs will be trended weekly until < 5.
        ii. If ectopic is thought to be most likely, the patient will be offered aspiration and/or treatment for ectopic pregnancy.

Article on First Trimester Bleeding

The AFP article, Hendriks 2019. First Trimester Bleeding: Evaluation and Management is a useful resource on how to evaluate and manage first trimester bleeding.

The charts below are cut and pasted from the article. Please review the article for complete information.

Ultrasound Findings

TABLE 2

Ultrasound Findings in Normal Early Pregnancy and Early Pregnancy Loss

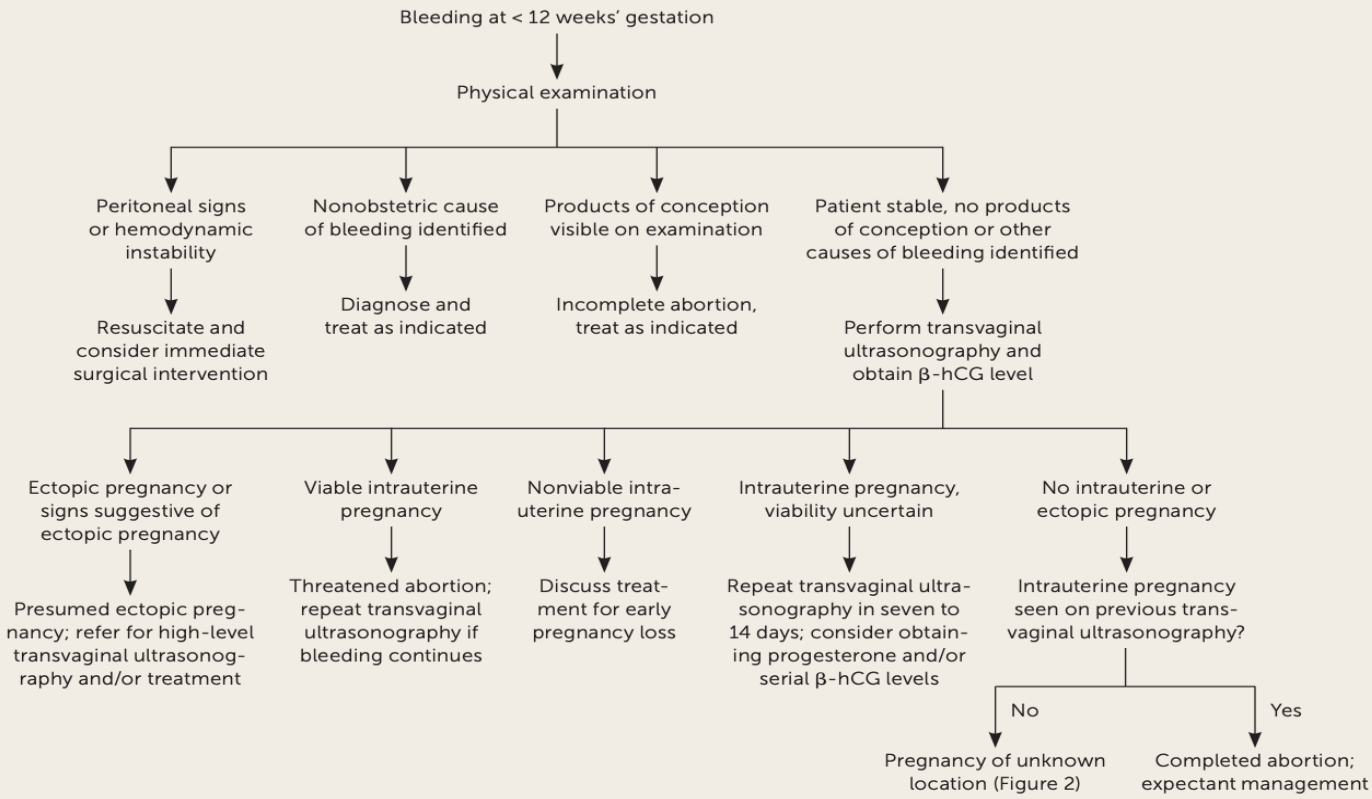
Ultrasound finding	Normal early pregnancy	Suspicious for early pregnancy loss*	Diagnostic of early pregnancy loss
Gestational sac (measured by mean sac diameter)	Appears four to five weeks after last menstrual period	Mean sac diameter of 16 to 24 mm and no embryo Absence of embryo with cardiac activity seven to 13 days after ultrasonography shows gestational sac without yolk sac Small gestational sac relative to size of embryo (< 5 mm difference between mean sac diameter and crown-rump length)	Mean sac diameter ≥ 25 mm and no embryo Absence of embryo with cardiac activity ≥ 2 weeks after ultrasonography shows gestational sac without yolk sac
Yolk sac	Appears 5.5 weeks after last menstrual period	Absence of embryo with cardiac activity seven to 10 days after ultrasonography shows gestational sac and yolk sac Enlarged yolk sac (> 7 mm)	Absence of embryo with cardiac activity ≥ 11 days after ultrasonography shows gestational sac and yolk sac
Embryo (measured by crown-rump length and embryonic cardiac activity)	Appears six weeks after last menstrual period; embryonic cardiac activity appears at 6.5 weeks	Crown-rump length < 7 mm and no embryonic cardiac activity Absence of embryo ≥ 6 weeks after last menstrual period Empty amnion (amnion seen adjacent to yolk sac with no visible embryo) Embryonic heartbeat ≤ 85 beats per minute	Crown-rump length ≥ 7 mm and no embryonic cardiac activity

*—Ultrasonography should be repeated in seven to 10 days to assess viability.

Information from references 4 and 5.

Evaluation of first trimester bleeding

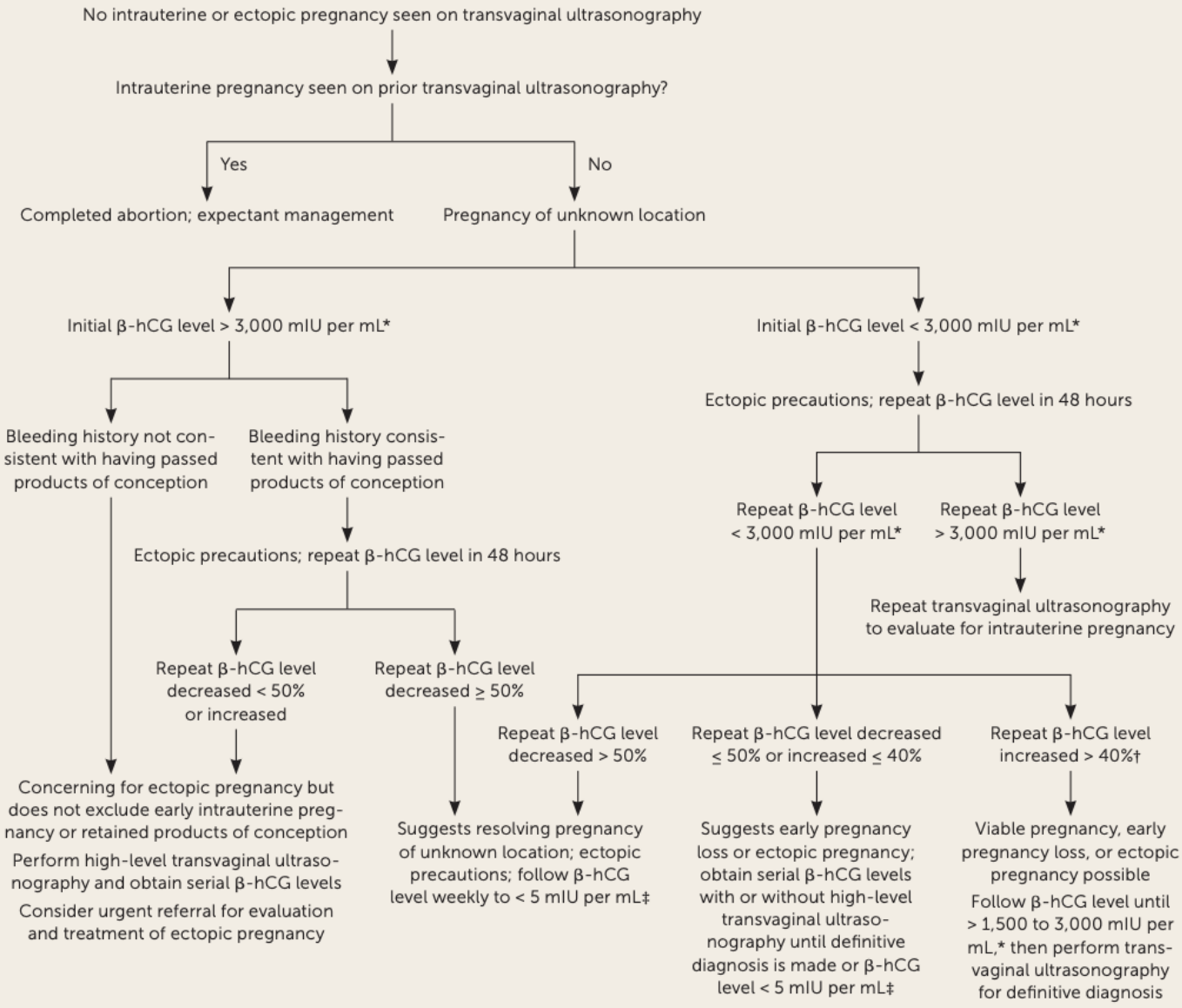
FIGURE 1



Evaluation of first trimester bleeding. (β-hCG = β subunit of human chorionic gonadotropin.)

Adapted with permission from Reproductive Health Access Project. First trimester bleeding algorithm. November 1, 2017. https://www.reproductiveaccess.org/resource/first-trimester-bleeding-algorithm/. Accessed November 10, 2017.

Evaluation of a Pregnancy of Unknown Location



*—The β-hCG level at which an intrauterine pregnancy should be seen on transvaginal ultrasonography is called the discriminatory level and varies from 1,500 to 3,000 mIU per mL.[10,14,15]

†—In a viable intrauterine pregnancy, there is a 99% chance that the β-hCG level will increase at least 33% to 49% in 48 hours, depending on the initial level.[6] Ectopic pregnancy can also present with this rate of increase, so use clinical judgment in combination with β-hCG values.

‡—The β-hCG level should be followed to zero only if ectopic pregnancy has not been excluded. If definitive diagnosis of complete abortion has been made, there is no need to obtain additional β-hCG levels.

Evaluation of first trimester bleeding in pregnancy of unknown location. (β-hCG = β subunit of human chorionic gonadotropin.)

Adapted with permission from Reproductive Health Access Project. First trimester bleeding algorithm. November 1, 2017. https://www.reproductiveaccess.org/resource/first-trimester-bleeding-algorithm/. Accessed November 10, 2017, with additional information from references 10, 14, and 15.

LXVIII. APPENDIX A: EAT SLEEP CONSOLE (ESC) for NOWS

Copied from the previous SOP "**Eat, Sleep, Console for Neonatal Opioid Withdrawal Syndrome Management"**

DESCRIPTION/OVERVIEW

This procedure describes the use of the Eat, Sleep, Console (ESC) method of caring for infants with Neonatal Opioid Withdrawal Syndrome (NOWS). This tool will be used for known or suspected opioid exposed infants. The goal of therapy for infants with NOWS is to allow the infant to function as a normal infant. **When well managed, infants experiencing NOWS will be able to feed well, sleep well, and be easily consoled**. According to the American Academy of Pediatrics Clinical Report on neonatal drug withdrawal, supportive care should be the first-line treatment for NOWS and interventions that interfere with the delivery of non-pharmacologic care should be limited.

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AREAS OF RESPONSIBILITY

Licensed and unlicensed staff working with infants in Mother Baby Unit (MBU), Newborn Nursery (NBN), Women's Special Care Unit (WSC), Carrie Tingley Hospital Inpatient Unit (CTH), and Intermediate Care Nursery (ICN) where this tool is used will follow this procedure.

PROCEDURE

1. **All NOWS infants will be monitored using the Eat, Sleep, Console approach.** The ESC approach evaluates whether an infant is:
    a. **Able to eat well (breast/ chestfeed well or take amount of formula based on stomach capacity and day of life)**
        i. Day 1: 5-10 ml/per feeding
        ii. Day 2: 10-15 ml/per feeding
        iii. Day 3: 20-30ml/per feeding
        iv. Day 4: 30-50ml/per feeding
        v. Day 5: 40-60 ml/per feeding
    b. **Able to sleep for a minimum of 1 hour undisturbed**
    c. **Able to be consoled within 10 minutes**

2. Evaluation using the ESC model will be initiated within 4-6 hours of birth and continue every 3-4 hours at the time of other routine infant care, such as with feedings and vital signs.
3. **If the infant is not able to do one of the three, then a team huddle will take place and the RN, with the support of the family, when possible will increase or optimize supportive, non-pharmacologic treatment.** If supportive care is maximized without improvement, then pharmacologic treatment will be started and the LIP notified. See appendix A.
4. Infants experiencing NOWS will be kept with their gestational parent whenever possible and rooming-in strongly encouraged. Parents/family will be educated and encouraged on non-pharmacologic care such as:
    a. Swaddling
    b. Holding
    c. Rocking
    d. Immediate intervention when crying (including feeding)
    e. Use of pacifiers
    f. A low stimulation environment will be created whenever possible:
        i. Dim lights
        ii. Minimal noise/white noise
        iii. Minimal disruptions when sleeping
        iv. Limiting visitors to those that will be quiet/supportive
5. If the parents/family is unavailable, a hospital volunteer cuddler will be utilized. See Appendix C.
6. NOWS infants will be fed on demand (feeding should be attempted as a consoling technique) and will often have caloric requirements significantly above the average infant.
    a. Formula feeding infants will start with 22 kcal formula or as ordered by the provider
    b. Breast/ chestfeeding infants will attempt feeding at least every three hours for a minimum of 10 minutes. Feeding attempt will not exceed 30 minutes if the infant is not vigorous. If an infant is not able to breast/chestfeed for a minimum of 10 minutes every three hours, Mom will be encouraged to hand express/pump and infant will be supplemented with available Expressed Breast/ chest milk and/or formula based on stomach capacity and day of life.
        i. The gestational parent will be set up with a breast/chest pump on admission and encouraged to pump after each feeding to help increase milk supply.
        ii. A lactation consult will be initiated and lactation will continue to follow/support dyad.
        iii. A lactation clinic appointment will be scheduled for follow up after hospital discharge for all breast/chestfeeding or pumping patients.
    c. Breast/chestfeeding will be highly encouraged unless contraindicated for any reason (e.g. Gestational parent is HIV positive, active illicit drug use, etc.).
7. A team huddle will be initiated if the infant has a “Yes” response to any ESC item

    a. The team huddle, at a minimum, will include two individuals (the bedside nurse), and a parent whenever possible. If a parent is unavailable, the team huddle will include two nurses.
    b. If the infant scores “Yes” on any ESC item during two consecutive assessments despite optimal non-pharmacologic care or other significant concerns are present, the team huddle will include a physician/LIP.
8. If the infant is not eating well, sleeping well, or is difficult to console and supportive care can no longer be increased, pharmacologic treatment will be initiated PRN and only given if the infant continues to not eat well, sleep well, or continues to be inconsolable despite optimal non-pharmacologic care. See Appendix A.
9. Morphine will be weaned/discontinued if the infant is eating well, sleeping well, and easily consoled. See Appendix A.
10. Vital signs will be performed every 4 hours (HR, RR, and Temp) at the time of routine infant care. Abnormal vital signs will be reported to the provider.
    a. O2 saturations will be checked 30-60 minutes after any PRN dose of morphine and 30-60 minutes after any dose increase or per unit protocol. If the infant is on scheduled morphine, O2 saturations will be completed once per shift or per unit protocol.
11. In the situation where an infant is on scheduled morphine due to being in the NBICU but is transferring to a unit that practices ESC, the accepting medical team may consider changing to PRN morphine dosing. This should be decided on a case-by-case basis, and take into consideration the current dose and clinical status of the infant.
12. If the infant does not require pharmacologic treatment by 96 hours of age, ESC assessments may be discontinued. In general, after 96 hours without pharmacological treatment, further inpatient observation for withdrawal symptoms is not needed.
    a. Neonates requiring pharmacologic treatment may be discharged 48 hours after the last dose of morphine is administered provided no severe signs of NOWS recur.

DEFINITIONS

EATING

- **Poor eating due to NOWS**: Baby **unable to coordinate feeding** *within* **10 minutes of showing hunger** OR **sustain feeding for** *at least* **10 minutes at the breast/chest** or **with 10 ml by alternate feeding method** (*or other age-appropriate duration/volume*) **due to opioid withdrawal symptoms** (e.g. fussiness, tremors, uncoordinated suck, excessive rooting).

- ***Special Note:*** **Do not indicate Yes** if poor eating is **clearly due to non-opioid related factors** (e.g. prematurity, transitional sleepiness or spittiness in first 24 hours, inability to latch due to infant/maternal anatomical factors).

SLEEPING

- **Sleep < 1 hour due to NOWS:** Baby **unable to sleep for *at least* one hour after feeding due to opioid withdrawal symptoms** (e.g. fussiness, restlessness, increased startle, tremors).
- ***Special Note:* Do not indicate Yes** if sleep < 1 hour is **clearly due to non-opioid related factors** (e.g. symptoms in first day likely due to nicotine or SSRI withdrawal, physiologic cluster feeding in first few days of life, interruptions in sleep for routine newborn testing).

CONSOLING

- **Unable to console within 10 minutes due to NOWS:** Baby **unable to console** *within* **10 minutes (due to opioid withdrawal symptoms) despite** infant caregiver/provider **effectively providing** any/all of the **non-pharmacological care interventions.**

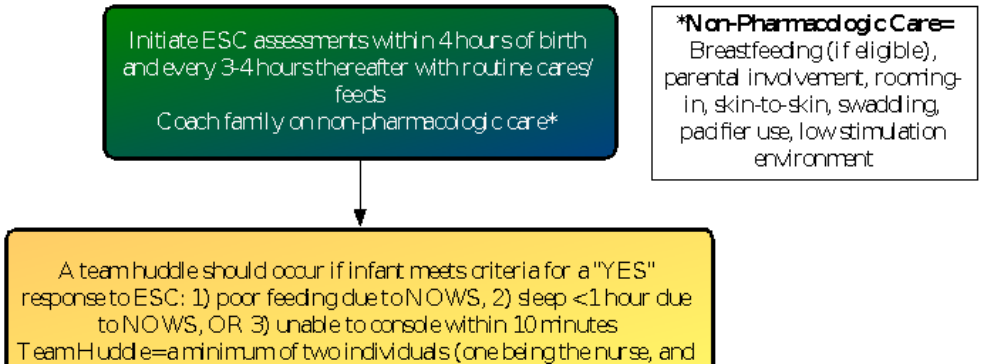
- ***Special Note:* Do not indicate "Yes"** if the infant's inconsolability is clearly **due to non-opioid related factors** (e.g. caregiver non-responsiveness to infant hunger cues, circumcision pain).

OPTIMAL FEEDING

- Baby feeding when showing early hunger cues and until content, on demand, without any limit placed on duration or volume of feeding. A baby should be offered feedings whenever showing the desire to suck.
- **Breast/chestfeeding:** Baby latching deeply with comfortable latch for gestational parent and sustained active suckling for baby with only brief pauses noted. Staff assist directly with breast/chestfeeding to achieve more optimal latch/position. Express colostrum and have baby feed on an adult finger first to organize suck prior to latching as needed. Withhold pacifier use as possible.
- **Bottle feeding:** Baby effectively coordinating suck and swallow without gagging or excessive spitting up. Instruct parents to provide chin support or modify position of bottle or flow of nipple if any feeding difficulties present.
- Consult a lactation or feeding specialist if feeding difficulties continue despite above optimal feeding measures.

TOC ♿

LXIX. APPENDIX B: ESC FLOWCHART AND MORPHINE DOSING



Is the baby able to eat well (breast/chestfeeding or formula)?
Able to sleep for a minimum of 1 hour?
Able to be consoled within 10 minutes?