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Nurse-Midwifery Service
Antepartum (AP) Clinical Resources
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Nurse-Midwives of Zuckerberg San Francisco General Nurse Midwifery Guidelines for Care

Scope of Practice

Introduction

The Nurse-Midwifery Service is an integral part of the obstetrical service at San Francisco General Hospital, providing an important health care option for women. Once nurse-midwifery care has been chosen, physician collaboration or consultation is available if needed or upon patient request. In the prenatal setting the primary and preferred consult is the chief resident or attending physician. In the inpatient setting, the chief resident is the preferred consultant, although more junior residents or the attending can be involved as needed. The nurse-midwife is responsible for the management and care of patients during the preconceptional, antepartum, intrapartum, and postpartum periods. The nurse-midwife collaborates with a physician when deviations from normal arise as described in the following guidelines. As members of the health care team, nurse-midwives may manage some women independently and some in collaboration with a physician (collaborative management). Other patients may be referred/transferred to physician with or without continued nurse-midwifery support and teaching. Because of hospital regulations a midwifery patient admitted to the hospital is admitted to the obstetrical service. However, the level of physician involvement is guided by the needs of the patient and the scope of practice of midwifery. Midwifery practice in this setting is also informed by institutional standardized procedures, available from the Medical Staff Office and filed in 5M and H22.

Types of Nurse-Midwifery Management

Primary Nurse-Midwifery Management

The nurse-midwife assumes responsibility for the care of essentially healthy women. Such care includes:

1. Observation, assessment and management of patients according to accepted institutional standards of care.
2. Utilization of clinical resources whenever a deviation from normal occurs.
3. Management of patients with selected deviations from normal when:
 - A. The diagnosis is clear with an expectedly normal and predictable outcome, e.g. easily accessible clinical resources exist that can appropriately guide management.
 - or
 - B. Discussion with a physician results in a mutual decision for continued primary nurse-midwifery management of the patient's care. The discussion will be documented in the patient's chart. What type of physician (e.g. resident, chief resident or attending) will be determined based on the clinical setting and acuity as delineated in the guidelines to follow. This discussion may occur in person, over the phone, by e-mail or e-referral, or at regularly scheduled Board Rounds on the Birth Center (see Problem-Oriented discussion below).
 - C. Formal consultations must occur in person with the patient in house/in the clinic and with the chart available. The physician does not necessarily have to examine the patient.

Midwifery/Obstetric Collaborative Management

Collaborative management is used when it is determined by the midwife and physician consultant that there will need to be ongoing physician input in the care of a patient. Collaborative management may ensue either through use of an ad-hoc guideline for care or through frequent physician consultations by the midwife.

The goal of consultation in a collaborative management situation is to develop a management plan that meets the patient's needs. Documentation of the collaboration may include:

1. The nurse-midwife's request for consultation
2. A delineation of CNM and physician responsibilities
3. Management decisions and plans for care
4. Plans for future consultations and/or visits with the High Risk Obstetrics Clinic.

It is expected that the physician will also document his/her role in the chart. The patient and family will be informed of the physician involvement in her care.

Transfer of Care

When a patient in the nurse-midwifery service develops a condition that requires complete and ongoing physician management, she is transferred to the OB service for antepartum, intrapartum and/or postpartum care. The nurse-midwifery service completely transfers all medical aspects of care for this patient but may continue to provide teaching and support services. Such transfer of responsibility should be clearly noted in the patient's chart. Antepartum patients whose complications resolve and who are not at risk for further sequelae may be referred back into the CNM service. Patients attending CenteringPregnancy groups may continue in their group even if their care has been transferred. The midwife and group will provide support and education, and at the discretion of the individual midwife, may continue to provide physical assessments of maternal and fetal well-being.

Types of Physician Involvement in Midwifery Care

Problem-Oriented Discussion:

- The midwife may discuss a specific aspect of the patient's clinical condition and develop a plan of care with a physician consultant, either in person, during board rounds, or by phone.
- The purpose of the problem-oriented discussion is to communicate to the physician the patient's clinical status and the proposed plan of care regarding the specific deviation from normal.
- This interaction does not generally involve the direct evaluation of the patient or the medical record by the physician unless specifically noted (for example, it may involve evaluation of a specific item, such as the fetal heart rate tracing).
- The midwife will document this interaction as a discussion rather than a consultation (i.e. "discussed plan re: gestational hypertension with Dr. X"), including whether it was a phone or in-person conversation.
- If the discussion involves only a specific problem and plan, this must be clearly noted by the midwife in the medical record.
- If the patient's medical status or condition warrants more comprehensive physician involvement, a formal consultation is in order.

Problem-oriented discussion of the patient with the physician may be used for primary midwifery management.

Consultation:

- When the midwife requests physician consultation, the physician will review the medical record, possibly interview and examine the patient (though this is not required), and consult with the midwife with respect to the diagnosis and plan of care.
- The consultation will be documented in the patient's medical record by the physician and by the midwife.
- The consultation process may be used either in primary midwifery management or in collaborative management.
- Consultation may occur on a one time basis or more frequently as the patient's condition requires.
- Attending physicians must be involved in all consultations.

Nurse Midwifery Guidelines for Antepartum Care

Clinic Setting

Antepartum clients of the nurse-midwives are self-selecting. Patients can enroll at three sites: 5M Women's Clinic, the Mission Neighborhood Health Center, and the Mission Neighborhood Health Center Excelsior Practice. Antepartum care includes:

I. Initial Evaluation and Subsequent Visits

A patient's initial evaluation is typically done by an RN or MEA. Subsequent visits are with the nurse-midwifery service unless the patient develops an indication for consultation or transfer of care. Subsequent visit schedule and extent of physical exam necessary at each visit will be dictated by individual patient risk factors. Appropriate diagnostic, therapeutic, and educational interventions will be offered as necessary.

II. Antepartum Medications

- A. Ursodial (Actigall)
- B. Analgesics, including narcotics such as Tylenol #3 and Vicodin (see dosing and indications in the section on intrapartum medications)
- C. Antibiotics, antivirals and antifungals
- D. Asthma medications
- E. URI remedies
- F. Steroids, oral and topical
- G. Doxylamine (Unisom)
- H. Vitamins and minerals
- I. Other medications as dictated by patient need, hospital formulary, and midwife prescriptive authority.

III. Conditions Requiring Communication with a Physician

Conditions with an * require consultation in HROB clinic. Other communications may be discussions or consultations, either by phone or in person, with or without the patient present (i.e. with the chart only), as acuity dictates. If patients are being seen in HROB it is assumed that an attending is involved in the consult. Other types of consults that do not require a HROB visit can be conducted with a resident physician. As stated above, the documentation in the chart will describe the level of physician involvement (i.e. phone consult, seen in conjunction with physician, etc.).

A. Maternal Conditions

- a. Pelvic mass noted by physical exam or ultrasound. A corpus luteum cyst of <3.0 cm noted on ultrasound in the first trimester is a normal finding and does not require communication with a physician. Fibroids only need discussion with a physician if they are greater than 8 cms or with the potential to preclude vaginal delivery.
- b. Uterine malformations or lesions that would preclude a vaginal delivery (e.g., a myoma in the lower uterine segment that obstructs the endocervical canal). Certain uterine malformations are associated with miscarriage and preterm delivery. For these patients consultation should be obtained after the first visit. Patients with large fibroids in the lower uterine segment should be seen at 32-34 weeks to discuss delivery plans.*
- c. Selected maternal infections with potential fetal sequelae, i.e. toxoplasmosis, cytomegalovirus, rubella, parvovirus, syphilis, severe primary herpes.*
- d. Recurrent pyelonephritis (more than one episode during pregnancy), or recurrent urinary tract infections (more than three during pregnancy despite antibiotic prophylaxis)

- e. Nephrolithiasis
- f. Persistent proteinuria (+1 or greater on a clean catch) in the absence of a urinary tract infection or pre-eclampsia. A 24-hour urine for protein, serum creatinine, and a urine analysis with microscopy should be obtained prior to communicating with the physician.
- g. Persistent severe anemia with hematocrit less than 28% despite iron therapy
- h. Platelet count less than 100,000
- i. History of thromboembolic disease regardless of etiology*
- j. Hypothyroidism
- k. Seizure disorder which is well-controlled on medications*
- l. BMI of 45 or greater
- m. History of severe or early-onset pre-eclampsia (<34 weeks). These women should be seen in HROB as soon as possible after the work-up appointment. A phone consult or e-referral consultation regarding appropriateness of low dose aspirin therapy should be initiated upon presentation.*
- n. New diagnosis of gestational hypertension or pre-eclampsia in pregnancy
- o. Chronic hypertension diagnosed before pregnancy.
- p. Active tuberculosis. Patient should be referred immediately to TB Clinic (see department wide guideline on the management of latent and active TB)*
- q. Cholestasis of pregnancy. A CBC with differential, LFTs, and bile acids should be obtained prior to referral. HROB appointment preferred but other consultation acceptable.
- r. Disorders of the placenta: low lying placenta less than 1 cm from the os at >36 weeks or placenta previa at 32 weeks.*
- s. Gestational Diabetes Type A2
 - i. Clients with diet-controlled gestational diabetes (A1) may be co-managed by the Perinatal Diabetes Clinic and their CNM, with physician involvement as indicated.
 - ii. Select gestational diabetics requiring insulin or oral hypoglycemics may be transferred to Wednesday CNM clinic where they will have concurrent Perinatal Diabetes Clinic, consults with HROB, and midwifery care.
- t. Hyperemesis gravidarum with hospital admission, inability to tolerate po fluids, or electrolyte changes.*
- u. Active drug or alcohol use. The decision whether to transfer these patients to HROB or keep them in midwifery care with consultation will be up to the referring midwife, who must balance the benefits of the services available in HROB (i.e. mental health and social work services) with the need to keep the client engaged in prenatal care.
- v. Mental illness characterized by the use of antipsychotic medications or active suicidal ideation. Women without psychosis or suicidal ideation but with a mental illness, history of suicide attempts, violence, trauma, or hospitalization for psychiatric problems, with a probability of recurrence of symptoms should be seen by the OB Psychiatric service. Examples include mood disorders, eating disorders, severe anxiety disorders, psychotic illnesses, or severe substance abuse. Physician involvement in this case may be with the psychiatrist rather than with the obstetrician.

B. Fetal Conditions

- a. Suspected IUGR with ultrasound EFW less than or equal to the 10th percentile. Start antenatal testing and communicate with a physician the day of diagnosis (if gestational age is greater than 26 weeks). A marked drop-off in growth or poor interval growth on interval ultrasound should also be referred for consultation, even if percentile growth is still above the 10th percentile. Once a diagnosis of IUGR has been made, the patient should be evaluated in HROB or induced depending on gestational age.

- b. Fetal macrosomia with EFW greater than 95th percentile on ultrasound
- c. Oligohydramnios --case needs to be discussed with a physician the same day (usually in the Birth Center)
- d. Polyhydramnios noted on ultrasound (AFI greater than or equal to 24)
- e. Any fetal structural abnormality detected by ultrasound, excluding the "soft signs" listed below. A level 2 ultrasound should be obtained if not already done. For the soft signs below, communication with a physician is not required but depending on patient preference and the results of other screening tests genetic counseling may be indicated. The "soft signs" that do not require communication with a physician are:
 - i. Choroid plexus cyst
 - ii. Thickened nuchal fold
 - iii. Echogenic intracardiac focus
 - iv. Echogenic bowel (needs referral for genetic counseling)
 - v. Renal pyelectasis (needs US follow up in third trimester and postnatally if persistent in the third trimester scan)
 - vi. Humeral and femoral shortening
- f. Presence of antibodies to C, c, D, Kell, E, e, Duffy, or other more rare antibodies. Discussion with the lab resident may also be necessary.

C. Obstetric History

- a. Recurrent pregnancy loss (history of three or more SABs if under age 35, two or more SABs if over age 35) or history suggestive of cervical insufficiency. Ideally, refer for preconceptional counseling or after initial visit if already pregnant.*
- b. History of uterine surgery in which the uterine cavity was entered (i.e., not a cesarean birth): refer to HROB as soon as possible.*
- c. History of a previous cesarean birth. Does not usually require a HROB visit. Generally speaking, women with one prior documented LTCS and no additional risk factors do not need discussion or consultation with a physician. For other women, the CNM should use the e-referral system to get advice on whether an appointment is necessary. If no appointment is necessary, the CNM completes the form "[Birth Choices For Women Who Have Had A Cesarean Birth Information Review and Consent Form](#)." See the provider instructions for this form for a more thorough discussion of this issue (see Appendix A).
- d. History of preterm birth: women with a history of a delivery <37 weeks (not induced for maternal indications) or PPROM should be referred as early as possible to HROB for evaluation for counseling re:progesterone.
- e. History of IUFD
- f. History of shoulder dystocia

IV. Conditions Requiring Transfer to the OB Service

- A. Maternal Conditions – *select patients with the below conditions may be managed in Wednesday CNM clinic in close consultation with HROB*
 - a. Active or uncontrolled seizure disorder.
 - b. Severe asthma with hospitalization for asthma during pregnancy or requiring repeated courses of systemic steroids during pregnancy
 - c. Cardiac disease (except asymptomatic mitral valve prolapse)
 - d. Pulmonary hypertension
 - e. Deep vein thrombosis
 - f. Sickle cell disease
 - g. Lupus/scleroderma/any connective tissue disease

- h. Cancer
 - i. Active viral hepatitis
 - j. HIV positive
 - k. Hyperthyroidism
 - l. Diabetes: Type I, Type II.
 - m. Paraplegia or quadriplegia
 - n. Severe preeclampsia
 - o. Uncontrolled and/or severe hypertension (chronic or gestational)
 - p. Chronic hypertension with superimposed preeclampsia
- B. Fetal Conditions
- a. Chronic placental abruption diagnosed by hospital admission
 - b. Presence of antibodies to C, c, D, Kell, E, e, or Duffy, with antibody titers greater than or equal to 1:8. Please call the obstetrics attending or the lab medicine resident at SFGH for rarer or unusual antibodies that you may have questions about
 - c. Multiple gestation
- C. Obstetric Conditions
- a. Cervical insufficiency, or obstetric history suggestive of cervical insufficiency (painless cervical dilatation less than 24 weeks), eligible for and desiring cerclage. Patients should be seen in High or Moderate Risk OB Clinic no later than 14 weeks if possible.

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I. Initial Evaluation

After the financial assessment by the eligibility worker (see Appendix A) the client is seen by an RN who obtains a medical, family, and obstetric history. Depending on clinic staffing, the RN or Health Worker will perform the initial psychosocial, health education, and nutrition assessments as required under the Margolin regulations. At this visit, AFP and HIV testing are offered; routine prenatal bloods (CBC, hemoglobin electrophoresis, VDRL, Blood type, Rh, Antibody screen, Rubella screen, Hepatitis B) are drawn; PPD is administered; urinalysis and urine culture is collected. Varicella will be drawn prn. The RN will refer the patient for nuchal translucency if appropriate. Various studies may be presented for patient participation. If a severe social problem is noted, the RN may make an immediate MSW referral.

II. Initial CNM Examination

During this first contact, the CNM reviews information collected by the RN regarding medical history and Margolin assessments, evaluates laboratory data, reviews medical records (B chart) for additional information, and performs a complete physical exam including Pap smear, GC and Chlamydia cultures and wet mount. At this time the CNM may make interventions, referrals, or consultations as appropriate based on medical needs or Margolin assessments. Clients who have not completed all assessments should be directed to the RN case coordinator.

III. Psychosocial, Health Education, Nutrition Assessments

As part of the Comprehensive Perinatal Service program all patients are referred each trimester for nutrition, social service and health education evaluations. During the course of care CNMs are encouraged to collect information, evaluate status, provide education as necessary charting additions on the appropriate assessment sheets. This will aid RNs and Health Workers in their ability to individualize care plans. Such activities should also be noted on billing sheets. See Appendix for description of ancillary providers and services available.

IV. Subsequent Visits

A. Frequency. Clients who are progressing normally shall be scheduled as follows:

1. Repeat visit after the initial evaluation at 16 weeks
2. Return at 26 weeks, every 4 weeks
3. From the 32th week, once every 2-4 weeks
4. After 38 weeks, at least once every week until delivery

B. Routine prenatal visits to include:

1. Weight
2. Blood pressure
3. Urinalysis – dipstick after 26 weeks
4. Abdominal examination and assessment of the fetus
5. POMR format with MCD and abdominal findings
6. Note FH with Doptone or fetoscope
7. Note fetal movement
8. History of current problems
9. Illicit danger signs of pregnancy and chart those positive responses
10. Evaluation of any unusual symptoms or findings
11. Update lab data base
12. Follow-up on previously identified problems, consult or referrals and chart appropriately using problem list and/or high risk roster as needed.
13. Physician consultation as appropriate. Indications of need for major medical evaluation (e.g., cardiology) are discussed with obstetrical attending and appropriate plan is made and so noted. Attending may also chart findings.

C. Subsequent laboratory tests to include the following:

1. Hgb/Hct, VDRL and HIV at 28 weeks on each client (or with GTT)
2. All Rh negative women to receive Rhogam antenatally at 28 weeks (See Rhogam Guidelines)
3. A 1 hour glucose tolerance test at 26-28 weeks. (See Diabetes - "Conditions and Treatment")
4. Client with positive PPD needs a chest x-ray and chest clinic consult prior to delivery. (Without documented chest x-ray, the infant may not be with the mother until a negative CXR is determined) See TB policy
5. Laboratory follow-up of special conditions (e.g., cystitis) as per protocol

D. Charting format is based on Problem Oriented Medical Record system. All problems requiring follow-up are to be listed numerically on the problem list. Notes may be made per number on the progress sheets. The flow sheet should be fully completed with comments if necessary.

High Risk Obstetric Clinic Consult and Referral Policy

SFGH CHN Policy Number: 15.1

http://insidechnsf.chnsf.org/primarycarepolicies/CHNDrafts/o-15/draft_high_risk_obstetrical_clin.htm

The High Risk Obstetric Clinic at San Francisco General Hospital is available for consultation and referral of high and moderate risk obstetric clients. As clinic physicians need the opportunity to review the medical record and examine the client, phone consultations are discouraged.

Procedure for making High Risk Obstetric Clinic appointments

1. The High Risk Obstetric Clinic is located in the 5M Women's Clinic at San Francisco General Hospital Medical Center outpatient department.
2. High risk appointments are made by 5M eligibility workers at 206-8351 or 3406.
3. Please specify whether the client had an intake appointment with a complete history or an initial prenatal visit with a complete physical exam.
4. A current copy of the client's prenatal records and a consult form must be in 5M at least one day prior to the client's appointment.
5. For a copy of the High Risk Obstetric Clinic Consult/Transfer Worksheet, see Appendix A.

Conditions Requiring High Risk Obstetric Clinic Consultation

Maternal Conditions

1. Pelvic mass noted by physical exam or ultrasound. A corpus luteum cysts of 3.0 cm or less noted on ultrasound is a normal finding in the first trimester and does not need referral.
2. Uterine malformations, or lesion that would preclude a vaginal delivery (e.g., a myoma in the lower uterine segment that obstructs the endocervical canal). Certain uterine malformations are associated with miscarriage and preterm delivery. For these patients consultation should be obtained after the first visit. Patients with large fibroids in the lower uterine segment should be seen at 32-34 weeks to discuss delivery plans.
3. Selected maternal infections with potential fetal sequelae, i.e. toxoplasmosis, cytomegalovirus, rubella, parvovirus, syphilis, severe primary herpes
4. Recurrent pyelonephritis (more than one episode during pregnancy), or recurrent urinary tract infections (more than three during pregnancy despite antibiotic prophylaxis)
5. Nephrolithiasis
6. Persistent proteinuria (+1 or greater on a clean catch) in the absence of a urinary tract infection. A 24-hour urine for protein, serum creatinine, and a urine analysis with microscopy should be obtained prior to consultation.
7. Persistent severe anemia with hematocrit less than 28% despite iron therapy
8. History of thromboembolic disease regardless of etiology
9. Hypothyroidism
10. Preconceptional counseling (type I or Type II diabetics or any maternal disease that could be exacerbated by pregnancy, e.g. SLE)
11. Seizure disorder which is well controlled on medications.
12. BMI of 45 or greater

Fetal Conditions

1. Suspected IUGR with ultrasound EFW less than or equal to the 10th percentile. Start antenatal testing the same day of diagnosis (if gestational age is greater than 26 weeks). A marked drop off in growth or poor interval growth on interval ultrasound should also be referred for consultation, even if percentile growth is still above the 10th percentile.
2. Fetal macrosomia with EFW greater than 95th percentile on ultrasound

3. Oligohydramnios (AFI less than or equal to 5)-- client needs to be seen for OB consultation the same day (usually in the Birth Center)
4. Polyhydramnios noted on ultrasound (AFI greater than or equal to 24)
5. Any fetal structural abnormality detected by ultrasound (excluding the "soft signs" listed in [appendix B](#)). A level 2 ultrasound should be obtained if not already done.
6. Isolated fetal "soft signs" or ultrasonographic markers for chromosomal abnormalities (e.g.: choroid plexus cysts, intracardiac echogenic foci, etc) do not require a referral to HROB Clinic. If you have any questions about counseling or management of any of these findings, we encourage you to call our genetic counselor on call at 476-4080 (8:30AM –5:00 PM), and a management plan will be made based on the patient's preference, age, maternal serum screening, and ultrasound findings. For a complete list of ultrasonographic "markers" see [appendix B](#). Cases of echogenic bowel should be referred for genetic counseling (not HROB clinic) on 5-M (call 206-3133 to make appointment) (See [appendix B](#)).
7. Presence of antibodies to C, c, D, Kell, E, e, or Duffy. Please call the OB attending or the lab medicine resident at SFGH for rarer or unusual antibodies that you may have questions about.

Obstetrical History

1. Recurrent pregnancy loss (history of three or more SABs if under age 35, two or more SABs if over age 35). Ideally, refer for preconceptional counseling or after initial visit if already pregnant.
2. History of uterine surgery where the uterine cavity was entered (other than a cesarean birth); refer for consultation as soon as possible.
3. History of a previous cesarean birth. In most cases, does not require a High Risk Consult. PCP should complete the form "[Birth Choices For Women Who Have Had A Cesarean Birth Information Review and Consent Form.](#)", see Appendix C. Refer only if indicated at approximately 32 weeks or sooner.

Conditions Requiring Transfer of Care to High Risk Obstetric Clinic

Maternal Conditions

1. Chronic hypertension diagnosed before pregnancy*
2. Hypertension in pregnancy with systolic BP greater than 140, and diastolic BP greater than 90**
3. Active or uncontrolled seizure disorder.
4. Severe asthma with hospitalization for asthma during pregnancy or requiring systemic steroids during pregnancy
5. Cardiac disease (except asymptomatic mitral valve prolapse)
6. Pulmonary hypertension
7. Platelet count less than 100,000
8. Deep vein thrombosis
9. Sickle cell disease
10. Lupus/scleroderma/any connective tissue disease
11. Cancer
12. Active tuberculosis
13. Active viral hepatitis
14. Cholestasis of pregnancy. ** A CBC with diff., LFTs, and bile acids should be obtained prior to referral.
15. HIV positive
16. Hyperthyroidism
17. Diabetes: Type I, Type II, or gestational. Gestational diabetics not requiring insulin may also be transferred to Tuesday CNM clinic where they will have concurrent Perinatal Diabetes Clinic (NOT HROB Clinic) and midwifery care. Under certain circumstances, clients with diet controlled gestational diabetes may be co-managed by the Perinatal Diabetes Clinic and their primary care provider. ([See Appendix D](#)).

18. Hyperemesis gravidarum with hospital admission, inability to tolerate po fluids, and electrolyte changes. These clients may be returned to their primary care providers if the hyperemesis resolves
19. Paraplegia or quadriplegia

- * If client has mild chronic hypertension, not on antihypertensive medications, and is seen by CNM at 5M clinic, initial consultation with HROB Team and possible co-management may be appropriate in selected cases.
- ** If client is seen by CNM at 5M clinic, initial consultation with HROB Team and possible co-management may be appropriate in selected cases.

Fetal Conditions

1. IUGR documented by ultrasound EFW less than or equal to the 10th percentile and confirmed with High Risk Obstetric Clinic consult. Start antenatal testing the same day of diagnosis (if gestational age is greater than 26 weeks).
2. Polyhydramnios with AFI greater than or equal to 31
3. Complete placenta previa or partial previa in the third trimester
4. Chronic placental abruption diagnosed by hospital admission
5. Presence of antibodies to C, c, D, Kell, E, e, or Duffy, with antibody titers greater than or equal to 1:8. Please call the obstetrics attending or the lab medicine resident at SFGH for rarer or unusual antibodies that you may have questions about
6. Multiple gestation

Obstetrical History

Incompetent cervix, or obstetric history suggestive of incompetent cervix (painless cervical dilatation less than 24 weeks). Please schedule formal ultrasound between 11 and 13 weeks. Patients should be seen in High Risk or Mod High Risk OB Clinic no later than 14 weeks if possible.

Other Special Conditions

For the following conditions, transfer is strongly recommended. However, in some cases, the need to keep the client engaged in prenatal care at their primary clinic may outweigh the benefits of services available in High Risk Clinic. This should be documented in the chart.

1. Active drug or alcohol use. The decision to transfer will be up to the referring provider, who must balance the benefits of the services available in High Risk Obstetric Clinic i.e. mental health and social work services, with the need to keep the client engaged in prenatal care
2. Mental illness characterized by the use of psychotropic medication, history of suicide attempts, violence, trauma, or hospitalization for psychiatric problems, with a probability of recurrence of symptoms. Examples include mood disorders, eating disorders, severe anxiety disorders, psychotic illnesses, severe substance abuse, or suicide attempts. The client's needs will dictate whether the client may have prenatal care at the primary clinic site with High Risk Obstetric Clinic psychiatric consultation, or will be transferred to High Risk Obstetric Clinic for more closely coordinated management.

Follow-up after High Risk Obstetric Clinic Consultation and/or Transfer

1. With all High Risk Obstetric Clinic consultations, a completed consult form and copy of the progress note will be faxed to the referring provider.
2. If a consultation visit results in a recommendation for transfer to the High Risk Obstetric Clinic, a completed consult form and copy of the progress note will be faxed to the referring provider with the recommendation for transfer.
3. If the referring provider wishes to discuss a consultation or transfer, they may call the Chief Obstetric Resident, whose pager number is available at the Birth Center (206-8725).

4. Every effort will be made to return transferred clients to their primary provider for postpartum and newborn care. Selected clients may benefit from postpartum care in the High Risk Obstetric Clinic.

Appendices to CHN Policy

Appendix A CHN: High Risk Obstetric Clinic Consult/Transfer Worksheet

Appendix B CHN: List of ultrasonographic markers that have been associated with chromosomal abnormalities

Appendix C CHN: “Birth Choices For Women Who Have Had A Cesarean Birth Information Review and Consent Form”

Appendix D CHN: Criteria For Co-Management of Diet Controlled Gestational Diabetics

Signed by: David Ofman, MD, Medical Director, Primary Care Service; Barbara Garcia, MPA, Deputy Director, Interim Primary Care Administrator, Primary Care Service; Phyllis Harding, RN, MS, Nursing Director, Primary Care Service

Date Adopted 09/29/03

Revised: 10/2008, 01/2018

Appendix B CHN Policy

List of ultrasonographic markers that have been associated with chromosomal abnormalities

- Choroid plexus cyst
- Thickened nuchal fold
- Echogenic intracardiac focus
- Echogenic bowel (needs referral for genetic counseling)
- Renal pyelectasis (needs US follow up in third trimester and postnatally if persistent in the third trimester scan)
- Humeral and femoral shortening

Please note that any of these findings, when observed without associated structural malformations, are generally of no clinical significance and cannot discriminate well between unaffected fetuses and those with Down syndrome. However, if you have any questions about management or how to counsel patients with any of these ultrasound findings, we encourage you to call our genetic counselor on call at 476-4080 (8:30AM –5:00 PM), and a management plan will be made based on the patient's preference, age, maternal serum screening, and ultrasound findings. Ultrasound follow up is not required for any of these markers, with the exception of renal pyelectasis (this is usually indicated in the US report). In cases of echogenic bowel, referral to genetic counseling is necessary (call 206-3133 for appointments), as it may be associated with cystic fibrosis, CMV infection, or meconium peritonitis.

Appendix C CHN Policy

Birth Choices After Cesarean Birth – Pt Info and Choice form

Appendix D CHN Policy

Criteria for Co-Management of Diet Controlled Gestational Diabetics

1. Patient is likely to be diet controlled
2. Patient has strong relationship with referring primary provider
3. Patient is willing to attend weekly diabetes clinic appointments as well as their PCP appointments
4. Patient's primary provider is willing to fax or have patient hand carry copies of each visit to diabetes clinic appointments.
5. Diabetes clinic will fax or have patient hand carry copies of each diabetes clinic visit to PCP appointments.

If you and your patient would like to consider co-management, please indicate this on your initial consultation form. After the patient has been seen, the nurse manager of the diabetes clinic will page you to discuss management. Please indicate your pager number on the consultation form.

Advanced Maternal Age

A. Definition

Age 35 or older at the time of delivery (33 years old for multiple gestations)

B. Clinical Implications

1. Down syndrome and other autosomal trisomies primarily occur as the result of meiotic nondisjunction, which increases with maternal age. At age 35 at delivery the midtrimester risk of Down syndrome is 1/250, and for any aneuploidy is 1/132; the term live-born risks DS 1/348, all aneuploidies 1/204. This risk increases with advancing maternal age
2. Birth of an affected child will have medical, educational, financial and emotional consequences. This in turn will have profound long-term implications for the whole family
3. Prenatal diagnosis of an affected child allows the woman and her family to make an informed decision concerning termination or continuation of the pregnancy. It also allows the prenatal care providers and pediatricians to provide anticipatory guidance to the family if the woman continues the pregnancy
4. Of note a 33-year-old woman with a twin gestation has the same midtrimester risk of fetal Down syndrome as a 35 year-old woman with singleton pregnancy and should therefore be offered genetic counseling [ACOG practice bulletin #27 May 2001]

C. Prenatal screening tools

1. First Trimester Screening

a. Nuchal translucency

- i. Nuchal translucency [NT] with maternal serum biochemical markers: free beta-hCG and PAPP-A (pregnancy associated plasma protein A)
- ii. Nuchal translucency can be done between 11 and 14 weeks IUP (11-12 weeks ideal)
- iii. Sensitivity rates vary in the literature. At UCSF they quote 70% for NT only; 80% for NT and biochemical marker combined
- iv. In women age ≥ 35 a 92% detection rate of Down Syndrome with 14% false positive rate and 8% false negative rate. 100% detection rate of Trisomy 18 with 0.1 false pos rate and 0% false negative rate [Krantz, D. et al, Aug 2000.]

b. Financial and logistical Issues

- i. Mcal and Mcal presumptive will cover NT screening
- ii. The biochemical screening is part of the California Prenatal Screening Program
- iii. The RN will offer NT screening to all women at intake and refer them to Prenatal Diagnosis at UCSF
- iv. If the patient has not been offered NT and first trimester serum screening at intake and is < 14 weeks at the WU visit, the CNM should offer this service to the patient and make the referral if necessary

2. Second Trimester Screening

a. AFP

- i. AFP is drawn between 10- 13 6/7 and/or 15-20 weeks gestation
- ii. When completing the form(s), PLEASE use dating by ultrasound (BPD if > 12 wk sono, CRL if < 12 wk sono). DO NOT use LMP dating if ultrasound dating is available, even if it is the same date. This is very important and is often done incorrectly
- iii. In women age 35 or greater at delivery the detection rate of Down Syndrome is 89% but the screen pos rate is 25%. By age 40 the screen pos rate is 40%. Women should be advised of the high rate of false positive results, which increase anxiety and the need for further testing

- iv. Patients who have had NT screening should be offered AFP screening, as it screens for other genetic disorders and for neural tube defects
- b. Level II Ultrasound
 - i. Ultrasound screening for aneuploidy in the second trimester is a poor test with low sensitivity and extremely poor predictive value and should not be offered as a screening tool for the purpose of Down's Syndrome screening. In high risk populations, it has a detection rate of 50% at best for DS. Patients who undergo ultrasound testing should be aware of the limitations of this test and NOT given a false sense of reassurance
 - ii. Level II ultrasound can be helpful in screening those fetuses at risk for aneuploidy; these patients would then be referred for further genetic counseling
 - iii. All abnormalities involving a major organ or structure [with a few exceptions] or 2 or more minor structural abnormalities indicate high risk for fetal aneuploidy. Of all of the second trimester 'soft signs' or ultrasonographic markers for DS, only an increased nuchal fold changes the a priori risk of DS significantly but this marker is rarely identified in fetuses with DS. It is doubtful that the presence of any of these markers (with the exception of Nuchal fold > 6 mm and a single umbilical artery) in the absence of a major malformation, have any impact on the probability risk of DS

D. Prenatal Diagnostic Tools

1. Chorionic Villi Sampling (CVS)
 - a. CVS is done between 10-13 weeks at UCSF. Can be transvaginal or transabdominal
 - b. Risks: risk of SAB is 1/150. Limb reduction risk is not found if CVS done after the 10 th week
 - c. Contraindications to transcervical: active cervical infection with HSV, chlamydia
 - d. Relative contraindications: vaginal bleeding, vaginal infections, extreme anteversion or retroversion of uterus, maternal body habitus precluding clear viewing of uterus. Advantages: earlier detection, less conspicuous IUP, more time for decision-making process in event of affected fetus, less maternal morbidity associated with earlier termination
 - e. CVS does not screen for neural tube defects
 - f. The California State Prenatal Screening Program will pay for CVS if the first trimester serum screening is positive
2. Amniocentesis
 - a. Amnio is done at UCSF between 15-20 weeks, ideal 16-19 weeks
 - b. Results available in 10-14 days
 - c. Risk: risk of SAB 1/200. Risk vaginal spotting or amniotic fluid leaking 1-2%; chorioamnionitis < 1 in 1000. Early amniocentesis at 11-13 weeks was assoc. with higher SAB rate and increased rate of clubfoot in fetus and increased rate of cell growth failure. (This is not done anymore)
3. Non-Invasive Prenatal Testing (NIPT)
 - a. NIPT is serum DNA testing of maternal blood to screen for trisomies 21, 18 and 13. NIPT can be done any time after 10 wks GA. Currently NIPT is only being done at the PDC.

E. Plan

1. Determine maternal age at intake and mark problem list with AMA if patient will be 35 or older at time of delivery (33 with twins)
2. Offer patient referral for genetic counseling for review of risks and testing options. If patient elects, these appointments are on Thursday mornings in 5M with Alysson Scott; appointments will often be made at prenatal intake, if need to obtain appointment can only be obtained by calling UCSF PDC. Document all decisions and outcomes of testing.
3. As with all women, review options and discuss the difference between screening and diagnostic tests
4. Some testing options that may be considered by women who are AMA:

- a. CA Genetic Screening (serum and NT)
 - b. CVS (10-13 weeks), amniocentesis (15-20 weeks, best 16-20 weeks), NIPT (>9 weeks)
 - c. Order level II ultrasound at time of routine anatomy scan
 - d. CNM to follow up on results of testing, notifying patient of results and referring to genetic counseling as needed. See "Genetic Screening" for details on how to do f/u.
5. If patient ≥ 40 start weekly ANT at 32 wks

F. Resources

1. UCSF Prenatal Diagnosis for appointments: 476-3369 or 476-4080
2. UCSF to speak to genetics counselor on call 476-4080

References

1. ACOG Practice Bulletin # 77 (2007, reaffirmed 2001) Screening for fetal chromosomal abnormalities
2. ACOG Committee Opinion # 233, October 1999: First Trimester Screening for Fetal Anomalies with Nuchal Translucency
3. Krantz D A et al, First Trimester Down Syndrome Screening using Dried Blood Biochemistry and Nuchal Translucency. Ob Gyn Vol 96 #2 Aug 2000:207-213

Revised 12/2007, 8/2009, 12/2016, 1/2018

Anemia

A. Definition

Abnormally low hemoglobin and hematocrit with or without microcytosis (low MCV). If anemia with MCV <80, see Hemoglobinopathy guideline as well

B. Signs and Symptoms

1. Fatigue
2. Weakness
3. Lightheadedness
4. Headaches
5. Cold intolerance
6. SOB
7. Brittle hair and/or nails
8. Often asymptomatic

C. Diagnostic Criteria:

	Hemoglobin (<g/dl)	Hematocrit	Ferritin (<mcg/L)
Trimester			
First	11.0	33.0	20
Second	10.5	32.0	20
Third	11.0	33.0	20
Adjustment for smoking			
< 2 packs/day	+0.3	+1.0	
> 2.0 packs/day	+0.7	+2.0	

Hemoglobin level 1 g/dL lower may be normal in African Americans

D. Clinical Implications in Pregnancy

1. Severe anemia (Hgb < 9 g/dL) is associated with the following conditions:
 - a. Low birth weight
 - b. Perinatal mortality
 - c. Increased ratio of placental weight to birth weight
2. There is no evidence of increase in adverse outcomes if Hgb is >9
3. Anemia in the first and second trimester appears to have the largest effect on outcome

E. Management

Diagnostic

1. Evaluate for a hemoglobinopathy (normal values for Hb A=>95%, HgA2<3.3%, Hb F<2%). If hemoglobinopathy suspected, see Hemoglobinopathy guideline
2. Ferritin (low) or Zinc protoporphin (elevated) suggest Fe-deficiency). If Fe-def suspected, treat as below with Fe
3. Repeat CBC and reticulocyte count one month after treatment

Therapeutic

1. Ferrous Sulfate therapy 325mg (65 mg elemental iron) daily to twice daily depending on severity of anemia
2. If iron is poorly tolerated due to side effects:
 - a. Consider switching to Ferrous Fumarate, 325 mg or Ferrous Gluconate, 325 mg
 - b. If the patient with mild anemia, consider intermittent dosing (120 mg elemental iron 1-2 times weekly)
 - c. Consider informing patient of the availability in health food stores of Floridex Liquid Iron Supplement (Floridex has very little elemental iron, thus is better tolerated, however it may not be as effective in treating anemia)
3. Obtain high-risk consult if Hgb is < 9 g/dL despite attempt at therapy

Education

1. Discuss dietary changes to increase iron intake and absorption:
2. Encourage intake of iron-rich foods
 - a. Lean red meat
 - b. Poultry, dark meat
 - c. Salmon
 - d. Egg yolks
 - e. Beans, especially kidney, lima, soy
 - f. Dried fruit, especially dried plums, raisins, apricots
 - g. Dark leafy greens, including broccoli, spinach, kale, collards, asparagus
 - h. Nuts, especially almonds, brazil nuts
 - i. Infusion of dried nettle
3. Review foods that interfere with absorption (coffee, tea, soda, whole grains, bran, eggs, beans, spinach, dairy/soy, antacids)
4. Review side effects of supplementation (constipation, nausea, bloating, black tarry stool, abdominal cramps)
5. Explain how best to take supplements, with juice with Vit C and in between meals
6. Iron interferes with zinc absorption when consumed in a fasting state; supplement with 25 mg Zinc daily (this amount may be present in the prenatal vitamin). In one study 60 mg of Fe decreased zinc absorption
7. Keep iron tablets out of reach of children, as they can be fatal if ingested in quantities of only 10-20 pills

F. Management of patient with persistent anemia

1. Get a good history
 - a. Is there a history of, or symptoms related to, a medical condition which is known to result in anemia (eg, tarry stools in a patient with ulcer-type pain, rheumatoid arthritis, renal failure, History of jaundice, gallstones?)
 - b. Is the anemia of recent origin, subacute, or lifelong? Recent anemia is almost always an acquired disorder, while lifelong anemia, particularly if accompanied by a positive family history, is likely to be inherited (eg, the hemoglobinopathies, hereditary spherocytosis)
2. Physical examination including:
 - a. The presence or absence of lymphadenopathy
 - b. Hepatosplenomegaly
 - c. Bone tenderness, especially over the sternum (bone pain may signify expansion of the marrow space due to infiltrative disease, as in chronic myelogenous leukemia, or lytic lesions as in multiple myeloma or metastatic cancer)

3. Consider a more detailed anemia workup
 - a. Iron studies, if they were not done already: iron level, transferrin/iron binding capacity, transferrin saturation, ferritin
 - b. Peripheral blood smear (to rule out hemolysis)
 - c. Reticulocyte count (increased reticulocyte count is strongly associated with blood loss or hemolysis)
 - d. Lead level
 - e. Thyroid function tests
 - f. LFTs to screen for liver disease
 - g. Direct antiglobulin test (Coombs test)
 - h. LDH and haptoglobin
4. Investigate for signs or symptoms of hemolysis
 - a. Jaundice with increased indirect bilirubin concentration
 - b. Splenomegaly
 - c. Presence of circulating spherocytic red cells on peripheral smear
 - d. Increased serum lactate dehydrogenase (LDH) concentration
 - e. Reduced or absent level of serum haptoglobin
 - f. Increased reticulocyte percentage or absolute reticulocyte number, indicating the bone marrow's response to the anemia
5. Consult MD service

Bibliography:

1. ACOG Practice Bulletin #95 (2008) Anemia in pregnancy
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3. Assessing and Managing Common Signs and Symptoms Lommell, L. and Jackson, P.1997 UCSF Nursing Press, pp. 650-66.
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6. Graves BW and MK Barger. 2001. A "Conservative" approach to iron supplementation during pregnancy. JMW 2001;46(3):159-160.
7. King JC. 2000. Determinants of maternal zinc status during pregnancy. Am J Clin Nutr 71(suppl):1223S-43S.
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Revised 12/200, 08/2009

Table 2
SERUM VALUES IN MICROCYTIC ANEMIAS (MCV <80 FL)

	Serum Iron	Serum Ferritin	TIBC	Transferrin Saturation	Comments
Iron deficiency					
Early	nl	↓	nl	nl	nl MCV, RDW, FEP, Hb/Hct
Late	↓	↓	↑	↓	↓ MCV, then ↓ Hb/Hct; ↑ RDW; ↑ FEP; ↑ retic with iron therapy
Thalassemia traits	nl	nl/↑	nl	nl	↑ RBC count; nl RDW; nl FEP; nl retic despite iron therapy.
Anemia of chronic disease	↓	nl/↑	↓	↓	nl RDW; ↑ FEP; nl/↓ RBC; nl retic despite iron therapy
Lead poisoning	nl/↑	nl	nl/↓	↑	↑ FEP
Sideroblastic anemia	↑	↑	nl/↓	↑	Rare

Abbreviations

nl = normal; ↓ = decreased; ↑ = increased

MCV = Mean corpuscular volume

FEP = Free erythrocyte protoporphyrin

RDW = Red cell distribution width

Hb/Hct = Hemoglobin, hematocrit

RBC = Red blood cell count

Retic = Reticulocyte count

Serum values in microcytic anemias
(Table 2 p32 from Mary Mays article)

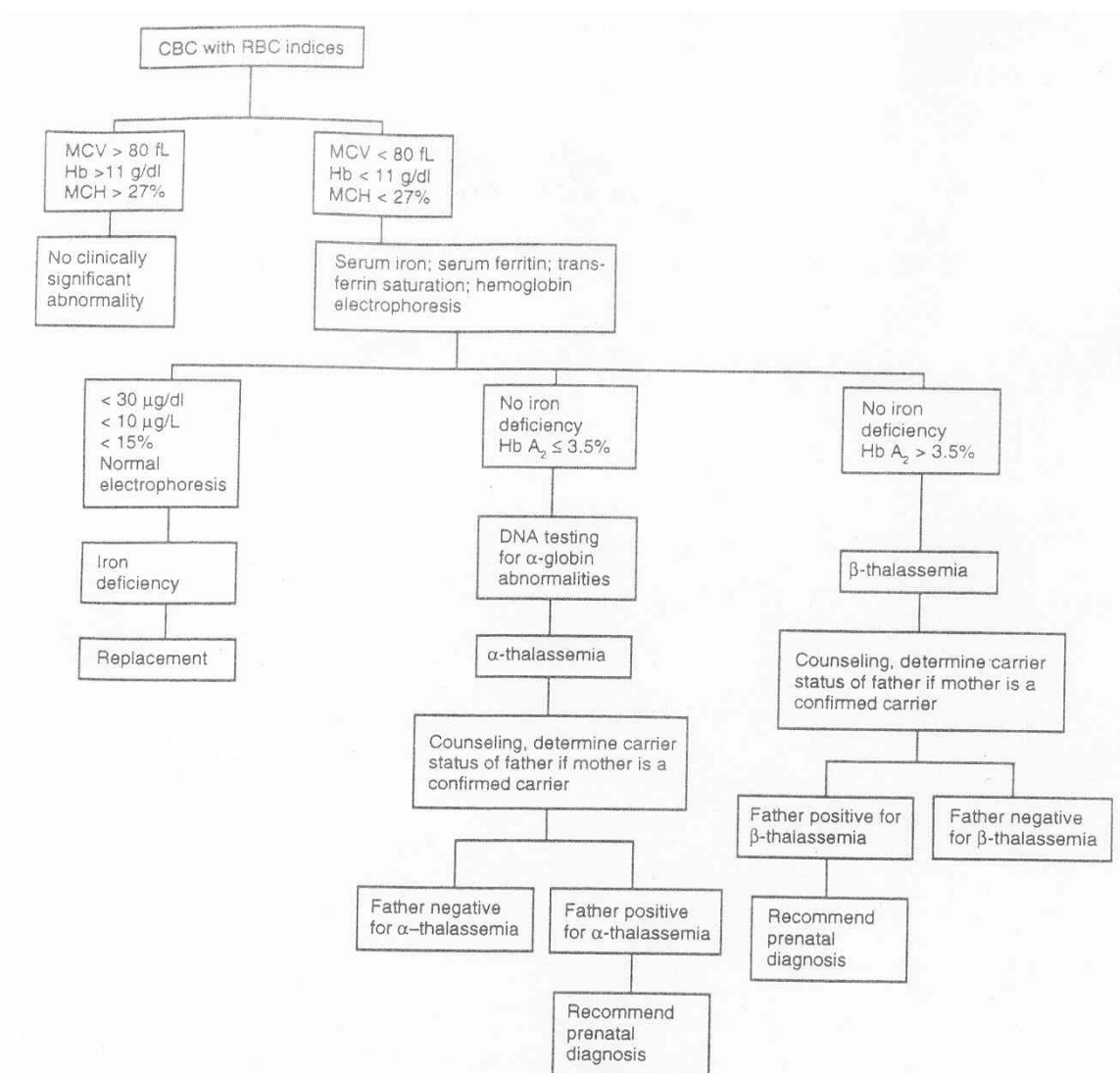
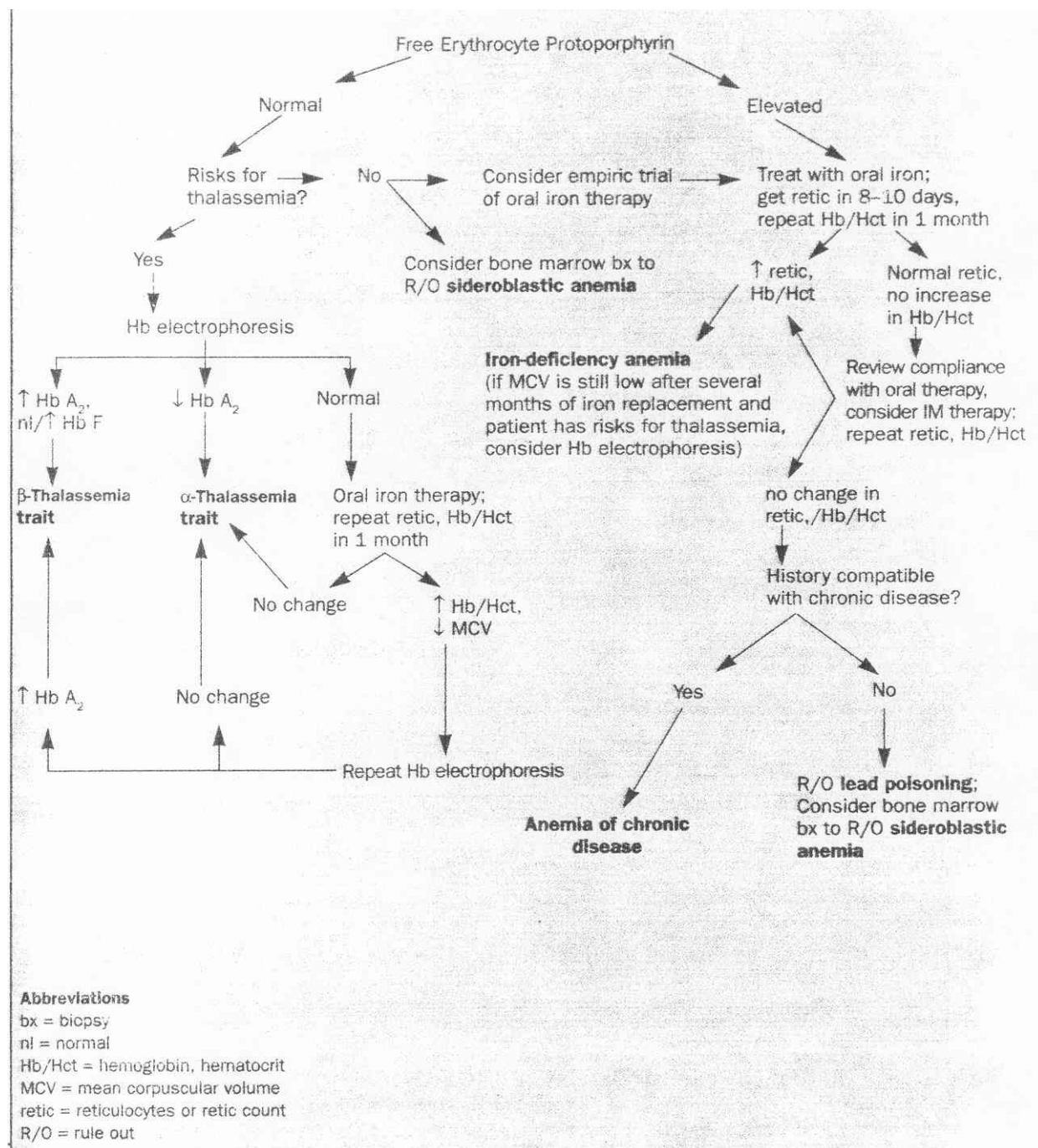


FIG. 1. Basic antepartum workup for hematologic assessment. Abbreviations: CBC = complete blood count; RBC = red blood cell; MCH = mean corpuscular hemoglobin; MCV = mean cell volume; Hb = hemoglobin. The decision threshold for the presence or absence of disease (80 fL) may vary with laboratories or patient populations.



Basic antepartum workup for hematological assessment
 (From ACOG Bulletin)

Figure 1: Work up of Microcytic Anemia using Free Erythrocyte Protoporphyrin Levels
 (From Mary Mays article)

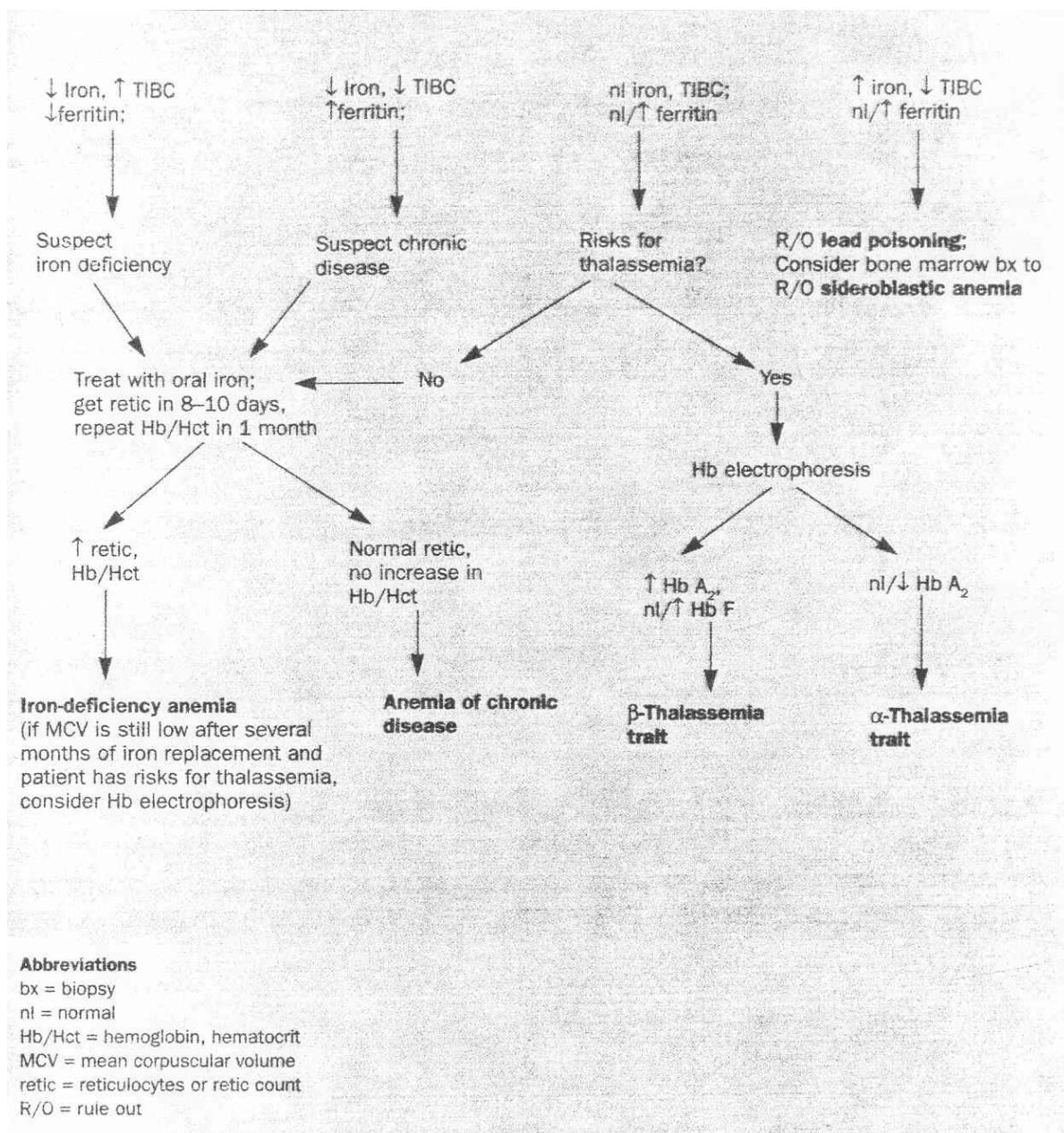


Figure 2: Work up of Microcytic anemia using Iron studies
(From Mary Mays article)

Antepartum Testing at ZSFG

(From Antenatal Testing Center (ANTC) Standardized Procedures and Protocols Manual, last updated January 2018)

DIAGNOSIS	INITIATION OF TESTING	APPROPRIATE TESTS	INTERVAL OF TESTING
Postdates <i>Begin testing for postdates prior to 41 weeks if EDD is unsure</i>	41 0/7 (use discretion for earlier initiation PRN dating, etc)	NST/AFI	41-42 0/7 weeks: 2x / week
IUGR (documented by ultrasound, <10th percentile)	28 weeks	NST/AFI UA Doppler Studies*	2x / week 1 x/ week
Suspected IUGR (awaiting ultrasound confirmation)	28 weeks	NST/AFI	1x/ week
Diabetes – GDMA1 and good control (FBG < 95 mg/dl PPBG < 140 mg/dl) GDMA2 good control (FBG < 95 mg/dl PPBG < 140 mg/dl) DM Type I or II without vascular disease, or GDM A2 with poor control	32 weeks 32 weeks 32 weeks	Kick counts only NST/AFI NST/AFI	 1x / week 2x/ week
DM type I or II– High-Risk Poor control, vascular disease or previous stillbirth	28 weeks	NST/AFI	2x/week
Hypertension Mild-Moderate (less than 160/105)	32 weeks	NST/AFI	1x / week
Hypertension, severe or with other pregnancy complications (e.g. diabetes, multiple gestation, etc)	28 weeks	NST/AFI	2x / week
Gestational hypertension	32 weeks	NST/AFI	1x/week
Preeclampsia	28 weeks	NST/AFI	2x / week
Antiphospholipid Antibody Syndrome	32 weeks	NST/AFI	1x / week
Cholestasis of Pregnancy	32 weeks	NST/AFI	1x / week

Twins Dichorionic-diamniotic with normal growth	32 weeks	NST / AF of largest pocket in each sac** (DVP)	1x / week
Monochorionic-diamniotic with normal growth	32 weeks	NST / AF of largest pocket in each sac** (DVP)	2x / week
Both	from 36 weeks on	NST / AF of largest pocket in each sac** (DVP)	2x / week
Twins IUGR or Discordant growth > 20 % or low amniotic fluid	28 weeks	NST / AF of largest pocket in each sac** (DVP)	2x / week
Twins: mono-mono	28 weeks (or at gestational age of intervention)	NST/AFI	Daily (inpatient)
Previous Stillbirth	32 weeks or 2 weeks prior to gestational age of previous occurrence (if IUFD <32 weeks)	NST/AFI	1x / week
Decreased Fetal Movement – testing is discontinued if normal FM AND normal testing (NST/AFI)	When occurs if GA is greater than 26 weeks	NST/AFI Watch for fetal movement on sono	If decreased fetal movement is persistent: 1x / week **Absent movements require consultation with HROB team
Oligohydramnios (DVP less than 2)	28 weeks	NST/AFI	As indicated. Consult with OB team. Inpatient management may be appropriate in some cases.
Low AFI (>5 <8) Without other risk factors	28 weeks	NST/AFI	1x / week **testing is discontinued for decreased fluid if AFI is > 8 on two (2) consecutive tests
Polyhydramnios AFI $\geq$ 25	32 weeks	NST/AFI	1x / week
Abnormal maternal serum screening: 1)if one abnormal value: AFP $\geq$ 2.5 MoM 2nd tri HCG $\geq$ 3.0 MoM Estriol $\leq$ 0.15 MoM Inhibin $\geq$ 3.0 MoM 1st tri PAPP-A $\leq$ 0.29 MoM	32 weeks	NST/AFI	1 x / week

2) if two or more abnormal values: AFP $\geq$ 2.0 MoM 2nd tri HCG $\geq$ 2.0 MoM Estriol $\leq$ 0.2 MoM Inhibin $\geq$ 2.0 MoM			
Major Congenital Anomaly	32 weeks	NST/AFI	1 x / week
Fetal Arrhythmias	At diagnosis or > 26 weeks	BPP (NST / AFI for intermittent arrhythmias) Sono check for hydrops (call OB Chief Resident or Attending to do this)	1x / week
Audible Deceleration using doppler on clinic visit	When occurs if GA > 28 weeks	NST/AFI	May be discontinued if NST/AFI is normal
Red Cell Alloimmunization	28 weeks	NST/AFI	1 x / week or more frequently depending on Doppler MCA or OD450 values
Herpes Gestationis	32 weeks	NST/AFI	1 x / week
Parvovirus >24 weeks with + IgM	28 weeks	NST/AFI ONLY if fetus is at risk (determined by Doppler MCA studies*)	1x / week x 12 weeks
HIV + / BAPAC patient	32 weeks	NST/AFI	1x / week
Sickle cell disease	32 weeks	NST/AFI	1 x / week
Severe maternal conditions (cardiac, pulmonary, others)	Case-by-case basis	NST/AFI	1 x / week or more frequently as indicated
Seizure disorder - poorly controlled (ANTC not needed if well controlled)	32 weeks	NST/AFI	1 x / week
Active drug use	36 weeks	NST/AFI	1 x / week
Advanced maternal age 40 years or greater at EDD	32 weeks	NST/AFI	1 x / week
IVF	36 weeks	NST/ AFI	1 x / week
	40 weeks or >	NST/ AFI	2x /week
History of abruption previous pregnancy	2 weeks prior to GA at previous abruption	NST/AFI	1x/ week
BMI $\geq$ 40	36 weeks	NST/AFI	1x/week
Thyroid disease, uncontrolled	32 weeks	NST/AFI	2x/weekly

Maternal graves disease with TSI > 13%	36 weeks	NST/AFI	1x/weekly
Heart block	28 weeks	BPP	1x/weekly
Current abruption	At dx	NST/AFI	1-2x/weekly
Circumvallate placenta	32 weeks	NST/AFI	1x/weekly
Velamentous cord insertion	32 weeks	NST/AFI	1x/weekly

* Doppler studies are performed in Ultrasound, Department of Radiology.

** Assessment of the amniotic fluid in twins is done by measuring the largest vertical pocket for each twin where membrane is clearly visible.

Antibody Screen Positive

(See “Rh Negative” guidelines for management of Rh Negative patients)

A. Definition

“When any fetal blood group factor inherited from the father is not possessed by the mother, antepartum or intrapartum fetal-maternal bleeding may stimulate an immune reaction by the mother. Maternal immune reactions can also occur from blood product transfusion. The formation of maternal antibodies, or “alloimmunization”, may lead to various degrees of transplacental passage of these antibodies into the fetal circulation. Depending on the degree of antigenicity and the amount and type of antibody involved, this transplacental passage may lead to hemolytic disease in the fetus and neonate.” ACOG Clinical Management Guideline #75.

B. Management

1. Plan to do Type and Screen when admitted to 6C
Not all antibodies cause alloimmunization. However, they may make screening for blood products more difficult. Therefore, any patient with a positive antibody screen needs to have blood sent for Type and Screen, instead of Type and Hold, when admitted to the Birth Center as an intrapartum patient.
2. Consult for any antibody that may cause HDN (hemolytic disease of the newborn). See following chart.

References

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2. Star, W et al. (1999). Ambulatory obstetrics (3rd edition). (pp 633-8). San Francisco, CA: UCSF Nursing Press.

Revised 08/2009

Table 9.1
Hemolytic Disease Due to Irregular Antibodies

Blood Group System	Antigens Related to Hemolytic Disease	Severity of Hemolytic Disease	Proposed Management
Lewis		Not a proved cause of hemolytic disease of the newborn	
I		Not a proved cause of hemolytic disease of the newborn	
Kell	K	Mild to severe with hydrops fetalis	Amniotic fluid bilirubin studies
	k	Mild	Expectant
	Ko	Mild	Expectant
	Kp ^a	Mild	Expectant
	Kp ^b	Mild	Expectant
	Js ^a	Mild	Expectant
	Js ^b	Mild	Expectant
Duffy	Fy ^a	Mild to severe with hydrops fetalis	Amniotic fluid bilirubin studies
	Fy ^b	Not a cause of hemolytic disease of the newborn	
	Fy ³	Mild	Expectant
Kidd	Jk ^e	Mild to severe	Amniotic fluid bilirubin studies
	Jk ^b	Mild to severe	Amniotic fluid bilirubin studies
	Jk ³	Mild	Expectant
MNSs	M	Mild to severe	Amniotic fluid bilirubin studies
	N	Mild	Expectant
	S	Mild to severe	Amniotic fluid bilirubin studies
	s	Mild to severe	Amniotic fluid bilirubin studies
	U	Mild to severe	Amniotic fluid bilirubin studies
	Mi ^a	Moderate	Amniotic fluid bilirubin studies
	Mt ^a	Moderate	Amniotic fluid bilirubin studies
	V w	Mild	Expectant
	Mur	Mild	Expectant
	Hut	Mild	Expectant
Lutheran	Lu ^a	Mild	Expectant
	Lu ^b	Mild	Expectant
Diego	Di ^a	Mild to severe	Amniotic fluid bilirubin studies
	Di ^b	Mild to severe	Amniotic fluid bilirubin studies
Xg	Xg ^a	Mild	Expectant
P	PP ₁ P ^k (Tj ^a)	Mild to severe	Amniotic fluid bilirubin studies
Public Antigens	Yt ^a	Moderate to severe	Amniotic fluid bilirubin studies
	Yt ^b	Mild	Expectant
	Lan	Mild	Expectant
	En ^a	Moderate	Amniotic fluid bilirubin studies
	Ge	Mild	Expectant
	Jr ^a	Mild	Expectant
	Co ^a	Severe	Amniotic fluid bilirubin studies
	Co ^{a-b}	Mild	Expectant

(continued)

Hemolytic Disease Due to Irregular Antibodies (continued)

Blood Group System	Antigens Related to Hemolytic Disease	Severity of Hemolytic Disease	Proposed Management
Private antigens	Batty	Mild	Expectant
	Becker	Mild	Expectant
	Berrens	Mild	Expectant
	Biles	Moderate	Amniotic fluid bilirubin studies
	Evans	Mild	Expectant
	Golzales	Mild	Expectant
	Good	Severe	Amniotic fluid bilirubin studies
	Heibel	Moderate	Amniotic fluid bilirubin studies
	Hunt	Mild	Expectant
	Jobbins	Mild	Expectant
	Radin	Moderate	Amniotic fluid bilirubin studies
	Rm	Mild	Expectant
	Ven	Mild	Expectant
	Wright ^a	Severe	Amniotic fluid bilirubin studies
	Wright ^b	Mild	Expectant
	Zd	Moderate	Amniotic fluid bilirubin studies

Source: Weinstein, L. (1982). Irregular antibodies causing hemolytic disease of the newborn: A continuing problem. *Clinical Obstetrics and Gynecology*, 25 (2), 321–329. Reprinted with permission.

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Asthma

A. Definition

Asthma is a disorder of the airways. During an asthma attack, spasm of bronchial smooth muscle constricts the airway, airway edema and mucus further obstruct flow decreasing oxygenation through air trapping. Prevalence is 25% higher and severity worse for African Americans than for Euro Americans

B. Signs and Symptoms

Symptoms

1. Wheezing, rhonchi (note that absence of adventitious sounds does not exclude diagnosis of asthma)
2. Coughing
3. Shortness of breath
4. Chest tightness

Signs

1. Prolonged expiratory phase, i.e. longer than inspiratory phase or lung auscultation (inspiration is normally longer than expiration)
2. For severe asthma, tachypnea, retractions, cyanosis, altered mental status

C. Diagnostic Criteria

Pulmonary Function Tests: spirometry

1. Gold standard for new diagnosis only (if asthma is suspected). This will enable you to differentiate between obstructive and restrictive pulmonary disease.
2. Order spirometry before and after a dose of bronchodilator; the resource nurse can give you the proper form. (Not necessary for most cases, which can be diagnosed clinically)
3. May send to high risk clinic for consult for diagnosis

Symptomology

(Standardized by NIH panel)

1. Mild Intermittent Asthma
 - a. Symptoms occur <2 times/week
 - b. Nighttime symptoms <2 times/month
 - c. Asymptomatic, with normal PEF, between exacerbations
 - d. Exacerbations brief (lasting from a few hours to a few days)
2. Mild Persistent Asthma
 - a. Symptoms occur >2 times/week but <1 time/day
 - b. Nighttime symptoms occur <2 times/month
 - c. Exacerbations may affect activity
 - d. PEF normal (>80% of personal best)
3. Moderate Persistent Asthma
 - a. Daily symptoms; nighttime symptoms common
 - b. Symptoms affect activity, require use of aerosolized bronchodilator
 - c. Exacerbations occur >2 times/week, may last for days
 - d. PEF falls below 80% of personal best
4. Severe Persistent Asthma
 - a. Continual symptoms, day and night
 - b. Activity limited

- c. Frequent exacerbations
- d. PEF falls below 60% of personal best

D. Clinical Implications in Pregnancy

1. Increased risk of prematurity, fetal growth restriction, Cesarean birth, preeclampsia
2. Pattern of asthma in prior pregnancies is often predictive of expected severity in current pregnancy
3. In general, during pregnancy asthma improves in 1/3 of women, deteriorates in 1/3 and remains unchanged in 1/3

E. Management

Diagnostic

1. Confirm diagnosis of asthma and identify severe asthmatics requiring MD transfer.
 - a. Usually patient has received diagnosis in past
 - b. Some patients will present with compatible signs and symptoms, and give history of similar symptoms having recurred previously.
 - c. Patients requiring MD transfer:
 - i. 3 ER visits for asthma within the last 2 months
 - ii. History of multiple hospitalizations for asthma
 - iii. History of admission to intensive care unit for asthma
 - iv. History of systemic corticosteroid therapy > 4 weeks, or recent history of multiple short courses of systemic corticosteroids (usually prednisone)
 - v. Serious psychiatric disease; non-compliance risk
 - vi. H/O hypoxic seizure, hypoxic syncope, or intubation (very severe disease)
2. Obtain personal best peak expiratory flow (PEF) when patient asymptomatic
(See peak flow normal values in box below.)
 - a. Obtain peak flow meter by filling out CPD form (item # 7603764), have patient bring own meter every time she's seen
 - b. Record PEF at home twice daily until personal best PEF is established
 - c. If patient symptomatic, obtain spirometry at pulmonary lab to correlate FEV1 and FEV1/FVC ratio (percent of predicted) with personal best PEF
 - d. Bring PEF record to all clinic visits
 - e. If PEF <80% of personal best despite current therapy, pt. should be seen within 1-2 days for increased dose of steroid MDI, with/without oral prednisone x 10 days
 - f. If PEF <60% of personal best despite inhaled beta2 agonist (albuterol, levalbuterol tartrate [Xopenex]), metered dose inhaler (MDI) patient should go to the Birth Center immediately
3. Symptom review and lung auscultation every visit
4. Careful monitoring of fetal growth parameters
5. Obtain baseline sono at 18 weeks (poorly controlled asthma later in pregnancy can cause IUGR); should have sonos for growth if moderate or severe disease

Predicted Peak Expiratory Flow (liters/min)

Age (yrs)	55 in.	60 in.	65 in.	70 in.	75 in.
20	390	423	460	496	529
30	380	413	448	483	516
40	370	402	436	470	502
50	360	391	424	457	488

Therapeutic

1. Public health nurse referral to review use of peak flow meter and asthma medications and to identify potentials for avoiding asthma triggers

2. Treat concomitant illness known to exacerbate asthma: sinusitis and gastro-esophageal reflux
3. If client is symptomatic and uses meds, transfer to CNM High Risk clinic for co-management with consult at every visit
4. Stepped-up therapy for asthma (consult MD)
5. Labor and birth considerations: Anesthesia consult, nebulizer treatments for exacerbation in labor
6. Transfer to MD if:
 - a. Asthma not controlled (frequent drops in PEF, or persistent symptoms)
 - b. Recurrent exacerbations requiring oral prednisone
 - c. Hospitalization for asthma required
 - d. Evidence of poor fetal growth
 - e. Comorbidity (e.g. gestational diabetes, thyroid disease, psych disease)
 - f. Non-compliance

RX

(For Treatment regimens, see Step Treatment Guideline in Pregnancy in box below. For drugs and doses see Prescriber's table at the end)

General considerations:

1. If patient needs inhaled beta2 agonist (albuterol or levabuterol tartrate [Xopenex]) > 2 times/day (dx: mod asthma), RX steroid inhaler for regular use (i.e. Azmacort)
2. Prescribe inhaled beta2 agonist (albuterol or levabuterol tartrate [Xopenex]) to all asthmatics, to use prn exacerbation
3. Prescribe a spacer for all MDIs (Rx through pharmacy)

Step Therapy Medical Management of Asthma During Pregnancy

Mild Intermittent Asthma

No daily medications, albuterol as needed

Mild Persistent Asthma

Preferred – Low-dose inhaled corticosteroid

Alternative – Cromolyn, leukotriene receptor antagonist, or theophylline (serum level 5 to 12 mcg/mL)

Moderate Persistent Asthma

Preferred – Low-dose inhaled corticosteroid and salmeterol or medium-dose inhaled corticosteroid or (if needed) medium-dose inhaled corticosteroid and salmeterol

Alternative – Low-dose or (if needed) medium-dose inhaled corticosteroid and either leukotriene receptor antagonist or theophylline (serum level 5 to 12 mcg/mL)

Severe Persistent Asthma

Preferred – High-dose inhaled corticosteroid and salmeterol and (if needed) oral corticosteroid

Alternative – High-dose inhaled corticosteroid and theophylline (serum level 5 to 12 mcg/mL) and oral corticosteroid if needed

Education

1. Pathophysiology of asthma and effects on pregnancy
2. Proper use of medication (patients must use spacers with MDI, use inhaled beta2 agonist before using inhaled steroids, as it will aid steroids in getting to lower airways)
3. Proper use of peak flow meters (to avoid spurious & false-low values)
4. Monitoring PEF and knowing how to seek care
5. Avoid asthma triggers when practical

References

S:\Midwives\Guidelines & Resources\AP Resources\AP Resources 2018\AP Resources 2018 Complete.docx

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These clinical practice resources are informational in nature and are not a substitute for the clinical judgment of the health care provider. They are designed for clinical practice at Zuckerberg San Francisco General and may not be appropriate for use in other practice settings. They are based on information available at the time and may not be updated with the most current information at subsequent times. They are not all-inclusive and there may be additional safe and reasonable practices that are not included. They may not be duplicated or circulated without permission.

1. ACOG Practice Bulletin No. 90 (2008) Asthma in Pregnancy
2. Quick Reference Working Group Report on Managing Asthma during Pregnancy: Recommendations for Pharmacologic Treatment Update 2004. The National Institutes of Health. Publication No. 05-3279.
3. Tarascon Pocket Pharmacopia: 2007 Classic Shirt Pocket edition

Revised 8/2009

ASTHMA PRESCRIBER'S TABLE

	Drug Class	Dose	Indications	Side effects	Treatment Guidelines
Albuterol HFA: Ventolin, Proventil (not being filled by Walgreens, though it's formulary at SFGH)	Beta-2 Agonist; short-acting selective (SABA)	2 puffs q4h, prn	First line treatment	Tachycardia Tremor HA	Add inhaled steroids for frequent use
Levalbuterol: Xepion HFA	Beta-2 Agonist; short-acting Selective (SABA)	2 puffs q 4hr, prn	First line treatment	Tachycardia Tremor HA	Add inhaled steroids for frequent use
Salmeterol inhaled: Serevent Diskus	long -acting inhaled beta agonist	50 mcg INH: BID	For moderate persistent asthma, not controlled with SABA and inhaled steroids	Tachycardia Palpitations, HA, Tremor; Can cause serious paradoxical bronchospasm.	Alternative to an increased inhaled steroid dose; RCTs on non-pregnant adults suggest that this treatment is more effective (NIH).
Beclomethasone: Beclovent Beconase Vancril Vancenase	Inhaled corticosteroid; Anti-inflammatory	2-4 puffs QID	Frequent use of bronchodilator (Albuterol)	Cough Hoarseness Oral Thrush; Possible adrenal suppression and osteoporosis at high doses	
Q-Var (Beclomethasone)	Inhaled corticosteroid; anti-inflammatory	80 mcg 2-4 puffs BID	For frequent use of Albuterol inhaler	Same as above	
Budesonide (Pulmicort, Rhinocort)	Inhaled corticosteroid	90, 180 mcg/spray DPI 180-360 mcg BID	For frequent use of Albuterol inhaler	Same as above	Preferred corticosteroid per NIH, b/c more data availre:safety
Flunisolide: (Aerobid)	Inhaled corticosteroid; Anti-inflammatory	2-4 puffs BID	Same as above	Same as above	
Triamcinlone: Asmacort	Inhaled corticsteroid;	2-4 puffs TID-QID	Same as above	Same as above	

	Drug Class	Dose	Indications	Side effects	Treatment Guidelines
	Anti-inflammatory				
Cromolyn Sodium: Intal	Mast cell stabilizer; Anti-inflammatory	2 puffs QID	Alternative to corticosteroids	None	Treat for 2-6 week trial; alternative to inhaled corticosteroids, but thought to not be as effective in pregnant women even if asthma was controlled with its use prior to pregnancy (NIH)
Prednisone	Oral steroid	60 mg QD	Used to treat exacerbations	≤2 weeks: potential mood changes, incr appetite, PUD, wt gain, aseptic necrosis of femur (rare) ≥3 weeks: adrenal suppression, immune suppression, TB reactivation, diabetes, HTN, Cushing's syndrome, myopathy, osteoporosis, cataracts, exacer of schizophrenia	5-10 day course("burst"); no taper; institute other long term control measures (adjust inhaled steroid dose)

Revised 8/2009

Bacterial Vaginosis

Definition

Bacterial vaginosis is a polymicrobial clinical syndrome resulting from replacement of the normal hydrogen peroxide-producing *Lactobacillus* sp. in the vagina with high concentrations of anaerobic bacteria. (CDC 2006). It is the most common cause of abnormal vaginal discharge and malodor, although 50% of cases are asymptomatic. BV is not thought to be sexually transmitted. BV is associated with having multiple sex partners, douching, and lack of vaginal lactobacilli.

A. Clinical Implications in Pregnancy

1. BV has consistently been associated with adverse pregnancy outcomes including:
 - a. Preterm birth
 - b. Studies have consistently shown that routine diagnosis and treatment DOES NOT reduce the risk of preterm birth (Carey et al, 2002; McDonald et al 2003, Klebanoff et al 2005). However, In women with previous preterm deliveries screening and treatment helped to prevent preterm delivery in 3 out of 4 RTC's (CDC 2006). Therefore, the CDC recommends treatment for all pregnant women with symptomatic BV, although they do not recommend screening for asymptomatic women.
 - c. Premature rupture of membranes
 - d. Chorioamnionitis
 - e. Spontaneous abortion
 - f. Increased risk for acquisition of HIV, HSV-2, gonorrhea and Chlamydia
 - g. Postpartum endometritis. Treatment may reduce the rates of postpartum endometritis.

B. Signs and Symptoms

1. Fishy vaginal odor
2. Watery, frothy or homogenous whitish or grayish discharge that thinly coats vaginal walls
3. Irritation, rarely itching

NOTE: 50-75% of women with BV are asymptomatic (Up to Date)

C. Objective Findings

1. PE:
 - a. Vulva: May see discharge at introitus
 - b. Vagina: watery, frothy or homogenous whitish or grayish malodorous discharge
 - c. Cervix: may be friable
2. LAB: Wet Mount: Normal Saline:
 - a. presence of clue cells (bacterial clumping within epithelial cells)
 - b. positive Whiff test (fishy odor liberated when 10% KOH added to vaginal discharge)
 - c. gram stain: mixed flora lactobacillus is absent, small gram pos. cocci, small gram neg rods
 - d. Ph >4.5

D. Diagnostic Criteria

1. Must have three out of four objective findings (discharge, clue cells, +whiff, pH >4.5). Because of this, Pap results suggestive of BV are not diagnostic (49 sensitivity and 93 specificity).

E. Management

Diagnostic

1. As above, culture not recommended or useful (too many organisms)

Therapeutic

1. Recommendation for *pregnancy*:
 - a. Metronidazole 500mg BID x 7 days
 - b. Metronidazole 250mg TID x 7 days
 - c. Clindamycin 300 mg po BID x 7 days (about 8 x more expensive)
2. Recommendations for *non pregnant* women:
 - a. Metronidazole 500 mg BID x 7 days (most effective)
 - b. Clindamycin 300 mg po BID x 7 days
 - c. Metrogel cream .75% 1 appl BID x 5 days or Q HS x 5-7D *topical*
 - d. Clindamycin cream 2% 1 appl PV Q HS x 7D *topical*
 - e. Clindamycin ovules 100g intravaginally QHS x 3D *topical*
 - f. Probiotics: Fem Dophylus (Lactobacillus) made by Jarrow PO BID x 30 days or 2 caps PV QHS x 7D

Education

1. Not an STD, implications in pregnancy
2. PTL s/sx if appropriate (BV is associated with PTL, however, treating BV doesn't prevent PTL)
3. stress reduction
4. No ETOH with metronidazole.

Follow up

1. None needed, prn with symptoms

Recurrent infection

1. Reoccurrence of BV is common with rates of 25% in 4-6 weeks up to 80% within a year (Sobel et al 1993). Recurrent infection usually indicates incomplete treatment therefore confirm compliance with medication. However, it could also be due to reinfection or failure of Lactobacilli to recolonize. The maintenance of healthy vaginal flora in pregnancy is a crucial component in managing recurrent infection.

Management of recurrent infection

Tx

1. Treat with different regimen and for 10-14 days.
2. Consider probiotics: Fem Dophylus (made by Jarrow) P.O. BID X 60 days or Tx with flagyl x 7 days and probiotics 30 D
3. For 3 or more documented infections in the past 12 months, some suggest a long term maintenance therapy with Metronidazole gel (Up to Date).

Education

1. Abstain form vaginal sex during treatment
2. Don't douche...with anything!
3. Use of condoms (especially in 1st month after treatment) may reduce reoccurrence.
4. Clean sex toys (or use condoms) between use by one woman then another
5. Avoid vaginal insertion following anal insertion of fingers or penis

References

1. ACOG Practice Bulletin. (2006). Clinical management guidelines for obstetrician-gynecologists, Number 72

2. Anukam, et al. (2006). Clinical study comparing probiotic Lactobacillus GR-1 and RC-14 with metronidazole vaginCal gel to treat symptomatic bacterial vaginosis. *Microbes and Infection*, 8(12-13), 2772-6
3. Anukam, K, Osazuwa, E, Ahonkhai, I, et al. (2006). Augmentation of antimicrobial metronidazole therapy of bacterial vaginosis with oral probiotic Lactobacillus rhamnosus GR-1 and Lactobacillus reuteri RC-14: randomized, double-blind, placebo controlled trial. *Microbes and Infection*, 8(6), 1450-4.
4. Center for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines: 2006.
5. Carey, C.J. et al. (2000). Metronidazole to Prevent Preterm Delivery in Pregnant Women with Asymptomatic Bacterial Vaginosis. *New England Journal of Medicine*, 342, (8), 534-540.
6. Leitch, H. et al (2003). Bacterial vaginosis as a risk factor for preterm delivery: A meta-analysis, *American Journal of Obstetrics and Gynecology*, 189, (1), 1-17.
7. Kekki, M. et al. (2001). Vaginal clindamycin in preventing preterm birth and periparturient infections in asymptomatic women with bacterial vaginosis: A randomized, controlled trial. *Obstetrics and Gynecology*, 97 (5), 643-648.
8. McDonald, H et al (2003). In The Cochrane Library, Issue 2, 2003
9. Othman et al (2007) Cochrane review Othman, M, Neilson, JP, & Alfirevic, Z. (2007). Probiotics for preventing preterm labour. The Cochrane database of systematic reviews, (1)
10. Reid et al (2001) Reid G. and Bocking, A. (2003). The potential for probiotics to prevent bacterial vaginosis and preterm labor. *American Journal of Obstetrics and Gynecology*. 189(4):1202-8.
11. Sobel JD, et al (1993) *Journal of Infectious Disease* 167: 78.
12. Up to Date (12/2008)

Revised 12/2007, 5/2009

Blood Products Declination

As of December 2017 there is a new departmentwide guideline on the OB Google Drive for management of these patients, included below.

PLEASE NOTE: early on in prenatal care it is our responsibility to give patient a copy of the low-literacy educational handout and the declination consent form for review. Many patients who decline blood products first need to consult with family, community and/or spiritual leaders about what products they may or may not accept in the event of an emergency – both of these documents will help guide their conversations. These can be found on the OB Google Drive.

Revised 02/2005, 12/2008, 01/2018

Blood Product Declination Form 3-318



T-CS0001

San Francisco
Health Network
SAN FRANCISCO GENERAL HOSPITAL
AND TRAUMA CENTER

Declination of Blood Products—Obstetrics

NAME

DOB

MRN

PCP

Patient ID/ Addressograph

This form is to be used in cases where a patient has DECLINED blood products even in an emergency of life and death.

Provider: Please contact Risk Management at (628) 206-6600 or (628) 206-6052 as soon as possible if there is an issue whether transfusion should be administered or should be withheld, or if withholding transfusion could endanger the patient's life or health.

☐ Check this box and complete the provider signature line below if the patient also refuses to sign this form.

Patient / Patient's Legal Representative:

My medical provider, _____, has discussed with me that transfusing
Print Provider's Name
 blood or blood components may be necessary as part of my medical treatment. My provider has described to me:

_____ The medical reasons for needing a transfusion and the possible medical benefits of transfusion

_____ Available medical alternatives to transfusion and the possible risks and benefits of those alternatives

_____ The possible risks and consequences of my declining or delaying transfusion, which may include permanent disability or death for me or my baby

I understand that:

_____ I may change my mind at any time

_____ My providers may need to move more quickly to cesarean section or hysterectomy to stop my bleeding.

_____ This conversation and my decision are strictly confidential and will not be discussed with my family, friends or other people.

_____ I have read this form or had it read to me. I have had the opportunity to ask questions and have had my questions answered to my satisfaction.

_____ I understand the risks and consequences that were explained to me and that my declining to allow transfusion could result in death or disability for me, my baby or both of us.

_____ I understand that once my baby is born a blood transfusion will be provided to my baby if necessary to save its life.

_____ I request that no blood or blood component be administered to me during this hospitalization / treatment period.

_____ I will accept the **blood products specifically indicated on the table below***. I also have indicated on the table all other treatments that I am willing to accept.

_____ In the case that my providers are recommending a blood transfusion and I choose to accept, I will be asked to sign a separate consent for this procedure while in the hospital.

*Plain language description of the following blood products available on separate handout "Description of blood products used in obstetrics."



T-CS0001

San Francisco
Health Network
SAN FRANCISCO GENERAL HOSPITAL
AND TRAUMA CENTER

NAME

DOB

MRN

PCP

Declination of Blood Products—Obstetrics

Patient ID/ Addressograph

Blood Product	Accept	Decline	Not discussed
Red Blood Cells*			
Fresh Frozen Plasma, FFP*			
Cryoprecipitate*			
Platelets*			
Albumin			
Intraoperative isovolemic hemodilution			
Cell salvage, Cell Saver			
Fibrinogen concentrate			
Prothrombin Complex Concentrate			
Rho(D) immune globulin, RhoGAM			
Hemodialysis			
Extracorporeal membrane oxygenation, ECMO			
Cardiopulmonary bypass			
Epidural blood patch			
Thrombin, optional in Floseal, Surgiflo, Gelfoam			
Fibrin glue, Tisseal			
Other(s):			

*Transfusions with these products also require a Consent to Transfusion (Form 5799916) to be signed by the patient or patient's surrogate.

I release the hospital, its personnel, the medical provider(s) and any other persons participating in my care from any responsibility for harm or death to me or my baby because I have declined to permit the use of blood or its components.

This consent was reviewed and signed: ☐ with family and/or friends present ☐ without family and/or friends present.

_____ Date	_____ Time	_____ Signature of Patient	_____ Print Name of Patient	
Witness:				
_____ Date	_____ Time	_____ Signature	_____ Print Name	
Interpreter:				
_____ Date	_____ Time	_____ Signature	_____ ID #	_____ Print Name
Provider:				
_____ Date	_____ Time	_____ Signature	_____ CHN#	_____ Print Name

Breast Mass

A. Definitions

1. CBCCP: The California Breast and Cervical Cancer Project is a federal program targeting low-income women in an effort to reduce cervical and breast cancer. We are a part of a consortium of providers in the Bay Area who are receiving money from this project. See addendum for eligibility and process.
2. CBE: Clinical Breast Exam. The most effective method is a 6-10 minute systematic, thorough palpation using the pads of 3 fingers with varying pressures.

B. Clinical implications during pregnancy

1. Normal changes of pregnancy
2. Masses requiring fine needle aspiration, treatment and/or follow up

C. Differential diagnosis of breast mass in pregnancy

1. Epithelial breast cancer
2. Lactating adenoma
3. Fibroadenoma
4. Cystic disease
5. Lobular hyperplasia
6. Milk retention cyst (galactocele)
7. Abscess
8. Lipoma
9. Hamartoma (a benign focal malformation resembling a neoplasm)
10. Rarely, leukemia, lymphoma, phyllodes tumors, sarcoma, neuroma, or tuberculosis
11. (Woo, 2003)

D. Characteristics of suspicious mass

1. Single specific lump
2. Size >2cm
3. Immovable
4. Hard
5. Irregular borders
6. Skin dimpling
7. Skin ulceration
8. Local skin inflammation
9. Skin warm, red with mass
10. Nipple retraction
11. Nipple thickened and red, scaling or peeling, oozing, raw or crusty
12. Tethered skin, peau d'orange
13. Local skin tumor
14. Bloody nipple discharge, often unilateral

NOTE: Although these are classic characteristics of a malignant mass, breast cancer doesn't always conform to this clinical picture (Barton et al, 1999).

"In one study, for example, single lesions were the presenting feature in the same percentage of women ultimately diagnosed with benign or malignant disease on biopsy (91 percent), and a significant number of malignant lesions were soft or cystic (38 percent), freely movable (61 percent), regular (41 percent), and less than 2 cm in size (28 percent)." (Up to Date).

E. Plan

Diagnostic

1. Get a good history. This is critical for evaluating risk profile.
 - a. Family history of breast cancer and cancer, in general.
 - b. Other risk factors for breast CA (ETOH use, age of menarche)
 - c. How was it first noticed (accidentally, SBE, CBE, or mammogram)
 - d. Change in size or cyclic change in size
 - e. Presence of nipple discharge
2. CBE
 - a. Size and position of mass using clock system
 - b. Characteristics of mass
3. Examination of lymph nodes
4. For non-suspicious mass (not highly suspicious for CA) do an e-referral to get the patient an appointment with the 5M Breast Clinic.
5. For a suspicious mass, consult with one of the NPs who work the Breast Clinic (Dana Russ and Kristen Sligar). They can assess and help arrange for urgent services prn (ie FNA, breast ultrasound). If neither is available consult with an attending in clinic or if none available, the Gyn or OB attending on call.

Follow up

1. Persistent breast masses (more than 2-4 weeks) should be investigated even though 80% of them will be benign (Byrd, 1995)

Education

1. SBE Self breast exam monthly after cycle
2. Mammogram screening at age >40

References

1. Barton, Harris and Fletcher. (1999) Does this patient have cancer? The screening breast exam. Should it be done? How? JAMA Oct 6, 1999, Vol 282(13):1270-80.
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Revised 6/2003, 08/2009, 1/2018

Addendum: California Breast and Cervical Cancer Prevention Program

1. Paperwork

The CBCCCP will pay for the FNA after the patient MUST fill out the eligibility form. The patient can refuse to sign the consent, but not the eligibility form. Consents and eligibility forms are in Spanish, English and Chinese and are available via Eligibility or Clerical Staff. Completed forms are given to one of the eligibility workers.

2. Eligibility

A patient is eligible if the family income is <200% poverty AND the patient has no other insurance/Medical that will pay for the service.

A K card is generated (usually orange). This card is used to stamp the cytology slip. You must also write BC8 on the slip. Do not give the card to the patient.

Breech Presentation

Breech/transverse presentation at or near term

A. Definition

Breech presentation is defined as the fetal sacrum/hips or feet entering the pelvis first.

B. Clinical Implications in Pregnancy

Both maternal and fetal mortality and morbidity increase with vaginal breech as well as cesarean births. Maternal risks include increased: infection, cervical lacerations, perineal lacerations and hemorrhage. Fetal risks include: trauma, cord prolapse, head entrapment and related asphyxia, and a higher mortality and morbidity rate, although evidence differs on the extent if any of these outcomes. Mother's that undergo a cesarean section for breech have the related adverse sequelae of cesarean birth.

6-7 % of fetuses are in the breech presentation at 37 weeks. Without intervention approximately 3% of fetuses will present as breech in labor.

C. Etiology

1. Altered intrauterine contour or volume:

- a. Uterine anomalies (eg, bicornuate or septate uterus)
- b. Space occupying lesions (eg, uterine leiomyomata)
- c. Placental abnormalities (eg, placenta previa, cornual placenta)
- d. Multiparity resulting in a lax abdominal wall and more rounded intrauterine space
- e. Amniotic fluid volume abnormalities (polyhydramnios, oligohydramnios)
- f. Contracted maternal pelvis

2. Altered fetal shape:

- a. Fetal Anomaly (eg, anencephaly, hydrocephaly, sacroccocygeal teratoma)
- b. Extended fetal legs
- c. Altered fetal mobility:
- d. Crowding from multiple gestation
- e. Fetal asphyxia
- f. Impaired fetal growth
- g. Neurologic impairment
- h. Short umbilical cord
- i. Fetal death

D. Diagnostic Criteria

1. PE: Breech or transverse presentation on Leopolds. May do a vaginal exam to confirm findings
2. Confirm presentation with ultrasound before scheduling for version if ultrasound capabilities available.

E. Management

Diagnostic

1. Patient must have a formal ultrasound done after 16 weeks to r/o anomalies before an external cephalic version can be done.

Therapeutic

1. All needed resources and patient handouts related to ECV and vaginal breech deliveries can be found on the OB Googledrive under "breech". A decision-making algorithm, the ECV checklist, and the moxibustion patient handout are included below for reference. Again, these documents and others can be found on the googledrive.

2. Breech exercises - patients can begin “breech exercises” from 32-34 weeks. Have patient assume an inverted position 2-3 times a day for about 15-20 minutes.



3. Moxibustion- . moxibustion (mugwort) has successfully been used to turn breech babies into a normal head-down position prior to childbirth. (In the JAMA study in the 35th wk. 75.4% of the pts in the moxi group verted while 47.7% of the pts in the control group. At birth 75.4% of the fetuses were vtx and 62.3% of the control group). JAMA 1998 280 (18) , Kanakura (et al) 2001 See googledrive for patient education about moxibustion.
4. To plan for an ECV reference the OB Googledrive and follow the link to the ECV checklist. To schedule an ECV contact the charge nurse on H22. The overall success rate of version at approximately 37 wks is 65%.

Follow up

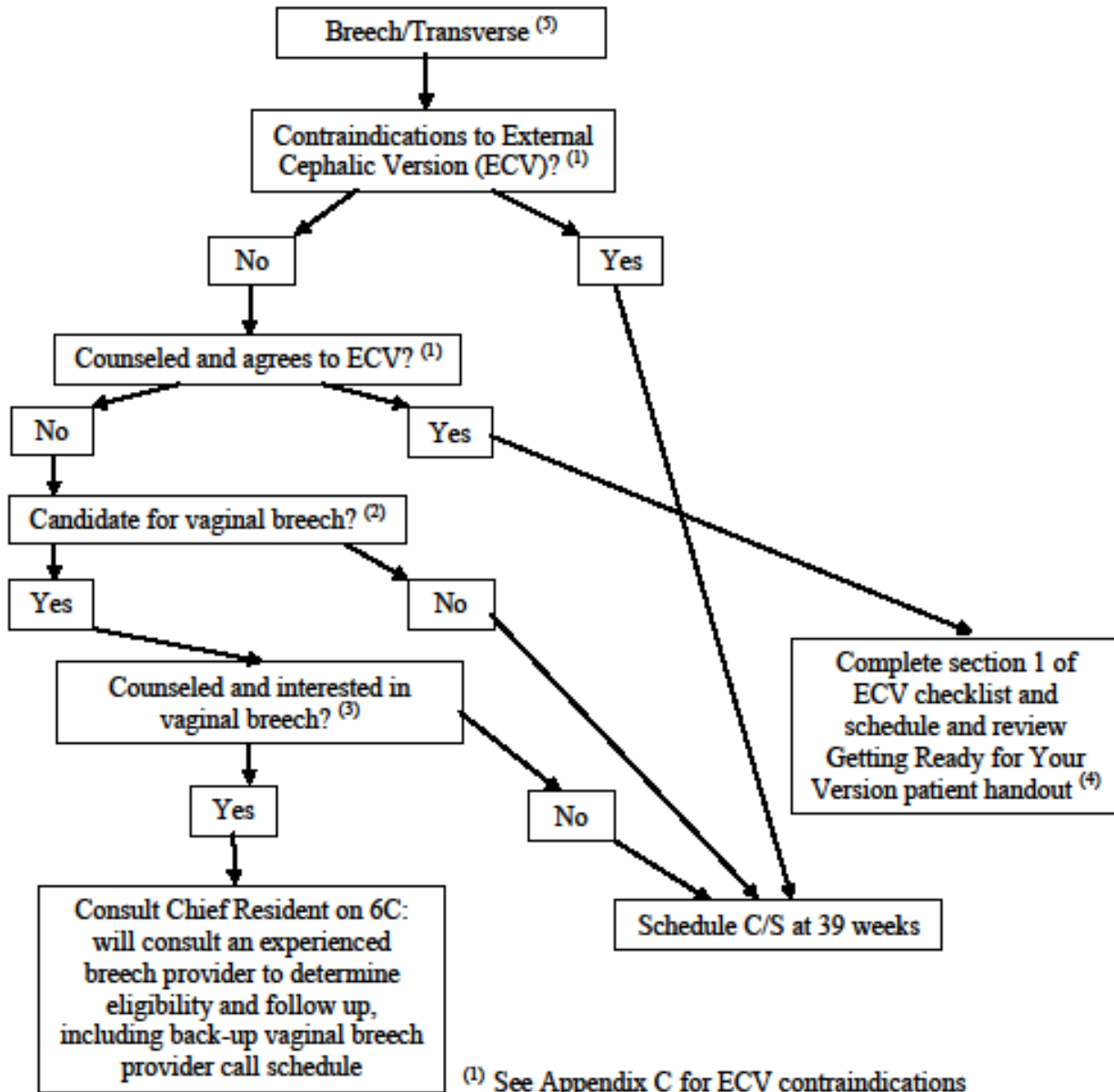
1. If version is unsuccessful, a second ECV will be considered. If breech is persistent, it should be determined if the patient is a candidate for a vaginal breech and if she is, if she is interested.
2. If patient wishes to attempt a vaginal breech birth the Chief Resident on H22 will find out if there are available providers with breech competencies. Contact the chief, give her/him info about the case, and they will investigate and call the patient.
3. If patient is found to be breech in labor (and the delivery is not imminent), she will have a cesarean section.

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2. Cardini, F and Huang, W (1998). Moxibustion for correction of breech presentation. Journal of the American Medical Association 280 (18)
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Revised 1/2018

Management Algorithm for Non-Cephalic Presentation >35 Weeks



- (1) See Appendix C for ECV contraindications and counseling instructions
- (2) See Appendix D to determine eligibility for vaginal breech
- (3) See My Baby is Breech patient handout/patient decision tool (Appendix E)
- (4) See Appendix B for ECV checklist and Getting Ready for Your Version patient handout
- (5) All patients can be offered moxibustion patient handout (Appendix G)

SAN FRANCISCO GENERAL HOSPITAL AND TRAUMA CENTER	NAME DOB MRN PCP
EXTERNAL CEPHALIC VERSION CHECKLIST	Patient ID / Addressograph

Section 1 (ideally completed prior to the day of the procedure in clinic or on 6C, but can be done on 6C the day of the procedure).

- Call 6C and schedule ECV for between 36+1 and 37 weeks, or as soon as possible if patient already >37 weeks

These clinical practice resources are informational in nature and are not a substitute for the clinical judgment of the health care provider. They are designed for clinical practice at Zuckerberg San Francisco General and may not be appropriate for use in other practice settings. They are based on information available at the time and may not be updated with the most current information at subsequent times. They are not all-inclusive and there may be additional safe and reasonable practices that are not included. They may not be duplicated or circulated without permission.

ECV Checklist Section 2 L&D Portion

 SAN FRANCISCO GENERAL HOSPITAL AND TRAUMA CENTER SF HEALTH NETWORK SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH EXTERNAL CEPHALIC VERSION CHECKLIST	NAME DOB MRN PCP Patient ID / Addressograph

Section 2 (completed by clinician who will attempt the ECV)

DATE:

TIME:

- ☐ Ensured membranes are intact if ECV is performed in early labor
- ☐ Formal ultrasound reviewed if available to assess for
 - Placental location
 - Uterine or fetal anomalies that would interfere with or preclude a vaginal delivery (e.g., large lower uterine segment fibroid, myelomeningocele, etc.)
- ☐ Review Rh status, ABS. Administer Rhogam post ECV if Rh (-) non-sensitize
- ☐ Bedside ultrasound performed to:
 - Confirm fetal and placental position (posterior placenta more successful)
 - Exclude oligohydramnios
 - Excluded hyper-extended fetal head
- ☐ Physical exam performed to assess if fetus is engaged/non-engaged breech, and to assess if fetal head is palpable (non-engaged & palpable fetal head are ideal)
- ☐ Documentation of fetal well-being (reactive NST or normal BPP or if in labor, category I tracing) prior to procedure
- ☐ Discussed benefits and risks of medications: Tocolytics (recommend Terbutaline 5 mins prior to procedure) and/or Epidural/Spinal analgesia
- ☐ Fetal heart rate is auscultated or visualized on U/S every two minutes, with interruption of the procedure if bradycardia occurs. Fetal bradycardia is common during ECV and usually transient. Sustained fetal bradycardia lasting > 7 minutes is unusual and would require emergency c/section.
- ☐ Post procedure fetal well-being is evaluated by cardiotocography for one hour (common for FHT to be nonreactive for 20-40mins after ECV) and until reactive NST or category I tracing is achieved
- ☐ Post procedure precautions reviewed (pain, bleeding, decreased FM)

Successful ECV:

- ☐ Consider admission for IOL if >39 weeks
- ☐ Follow up in clinic on _____

Unsuccessful ECV:

- ☐ Re-attempt ECV with or without spinal anesthesia on _____
- ☐ Consider vaginal breech if meets criteria
- ☐ Schedule C/S at 39 weeks

Date: _____ Time: _____ Provider name: _____ / _____ / _____ CHN ID# _____
 Print name Signature Title

Date: _____ Time: _____ RN Signature: _____ INVISION #: _____

Moxibustion, how to use: (Patient information sheet)

Moxibustion comes in cigar shaped rolls containing Artemisia (mugwort). These sticks are available from herbalists, Chinese medicine stockists and some acupuncturists. The heat from burning moxa sticks stimulate the baby's movements and encourage it to turn. They are inexpensive (80 cents each at Rainbow Grocery at 14th to Division and Folsom) and two sticks will be needed, (each stick can be used several times).

Sit on a chair in a relaxed position and place each foot on a book with your pinky toes hanging over the edge. Place each stick on another book with the tip in the gap.



Light the sticks (they burn with no flame but an intense heat and pungent smell) and position the hot tip as close as possible to the outside of each little toe with the heat directed at the point just above the toe nail (this is the acupoint BL67). Leave in place for 20 minutes. Be careful not to touch the skin as you will burn yourself. The heat should be as strong as you can tolerate, for the best effect.



After a few minutes, you will notice the baby begin to kick and move. The primary aim of the moxibustion treatment is to encourage the baby to move around and thus increase the effect of gravity which will help the heaviest part of the baby (its head) to turn over and enter into the pelvis.

This simple treatment is best done just before bed, starting at 34 - 36 weeks. It takes several hours for the baby to turn, and this will be easier if you are lying down, because the baby will not be sitting as firmly into the pelvis. Continue over several nights, or until the baby has turned itself. Some practitioners ask their patients to do this twice a day.

From: Andrea Robertson: "If your baby is breech". Birth International, Specialists in birth and midwifery an online source

Candida - Vulvovaginitis/ Monilia / Yeast Infection

A. Definition

1. A proliferation of candida-fungi that grow as budding yeast cells and as chains (hyphae) that cause symptoms of vaginitis (typically pruritus, vaginal burning, dyspareunia and external dysuria). 20-50% of women with a healthy vaginal ecosystem harbor candida (usually candida albicans).
2. Types of species include: candida albicans (65-85%), c. glabrata (5-10%), c. tropicalis (5-23%), c. guilliermondii (<3%), and c. parapsilosis (<3%).
3. Candidal Vaginitis is not an STI. 25% of all vaginitis is from yeast and is often induced by antibiotic use. It is linked to pregnancy, ETOH use, poor nutrition, diabetes & HIV infection
4. Categories of Vulvovaginal Candidiasis (VVC):

Uncomplicated VVC:

- a. Sporadic or infrequent VVC, mild to moderate, likely to be c. albicans and/or non-immunocompromised women

Complicated VVC:

- a. Recurrent VVC (more than 4 times in one year) or severe VVC (characterized by extensive vulvar erythema, edema, excoriation and fissure formation),
- b. Non-albicans Candidiasis, women with uncontrolled diabetes, debilitation or immunosuppression.
- c. Pregnant women.

B. Clinical Implications in Pregnancy

1. No adverse maternal or fetal effects though it is more difficult to treat and commonly reoccurs.

C. Signs and Symptoms

1. Pruritus
2. Discharge
3. Burning/irritation
4. Dysparunia
5. External dysuria
6. Erythema

D. Objective Findings

1. PE
 - a. Vulva: erythema, possible lesions and or fissures or excoriations
 - b. Vagina: thick, white/greenish curdy discharge, plaques
 - c. Cervix: white plaques
2. Wet Mount:
 - a. KOH : Yeast hyphae and buds,
 - b. Saline: increased WBC's (possibly), lactobacillus present
 - c. PH $\geq$ 4.5

E. Diagnostic Criteria

1. Symptoms plus wet mount

F. Management

Diagnostic

1. With recurrent VVS, vaginal culture to confirm species.

Therapeutic

2. Treatment during pregnancy (*CDC recommends 7 day treatments):

a. Miconazole 100 mg supp	1 PV Q hs x 7 days
b. Miconazole 2% vag. cream	1 appl. PV Q hs x 7days
c. Clotrimazole 1% vag cream	1 appl PV Q hs x 7 days
d. Clotrimazole 100mg tabs	1 PV Q hs x 7 days
e. Butocnazole 2% vag cream	1 appl PV Q hs x 3days (2-3rd trimester)*
f. Clotrimazole 500mg tab	1 PV Q hs x 1 days*
g. Miconazole 200 mg supp	1 PV Q hs x 3 days*

**first line for c albicans isolates in pregnancy is 7 day course of clotrimazole or miconazole. Shorter courses only for compliance issues.*

3. Treatment for resistant strains:

a. Terconazole cream 0.4%	1 appl. PV Q hs x 5-7 days
b. Terconazole supp. 80 mg.	1 appl PV Q hs x 3 days
c. Boric Acid supp. 600 mg	bid x 14 days – (Do Not use in pregnancy)

4. Treatment for severe Vulvovaginal Candidiasis:

- | |
|---|
| a. 7-14 days of topical azole |
| b. Fluconazole 150 mg P.O. in two sequential doses 3 days apart (Do Not use in pregnancy) |

Education

1. Hygiene, loose fitting clothing, cotton underwear, no underwear when sleeping (if possible)
2. Decreasing sugar intake, stress reduction
3. Eat 8 oz unsweetened yogurt QD (with live cultures).
4. Partners get treated only if there is reoccurrence

Follow up

1. Necessary only with HIV infection or prn for sx's

References

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2. Center for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines: 2006.
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Revised 11/2004, 05/2009

Carpal Tunnel Syndrome

A. Definition

Compression of the median nerve in the carpal tunnel due to physiologic edema causes pain, tingling, numbness and decreased sensation in the hands. Another reason for pain in the hands is De Quervain tenosynovitis (pain and tenderness at the side of the wrist beneath the base of the thumb) due to inflammation of the tendons. The vast majority of the time CTS will resolve in the postpartum period.

B. Signs and symptoms

1. Pain or paresthesias of the hands are almost always present.
2. CTS is often characterized by periods of remission and exacerbation
3. Symptoms of CTS are often reported to be worse at night and may be severe enough to awaken patients.
4. Symptoms are often provoked by activities requiring prolonged wrist flexion/extension such as driving, reading, typing, and holding a telephone.

C. Management

Diagnostic

1. Assess pattern and character of pain, alleviating and precipitating factors
2. Consider using Katz diagram to assist diagnosis (below)
3. Enquire about job responsibilities to assess for repetitive motion
4. Evaluate thumb strength in on abduction, (not flexion or opposition) (see diagram)

Therapeutic

1. Order wrist splints from orthotics (building 9, on 23rd St – near WIC) – order forms are in the 5M CNM office, on the googledrive, and in H22. Client should start to wear them at night and wear them more often if needed.
2. Exercises: CTS, Nerve and tendon gliding exercises (at the end of guideline)
3. Yoga (small studies have shown effectiveness-handout in 5M pt ed drawer)
4. Acupuncture may be helpful
5. Some patients report that plunging the hands in alternating cold and hot water (10 seconds each, five times total, start and end with cold) provides temporary relief from acute pain.
6. Consider herbal teas that are gently diuretic if there appears to be a lot of generalized body edema – Nettle and/or dandelion leaf
7. Continuous wave and/or pulsed ultrasound and electrical stimulation

Education

1. Exercises QID (give handout)
2. Possible alteration of work activities as it applies

Follow-up

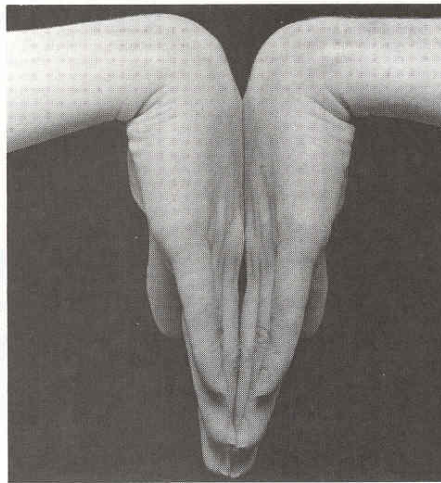
1. In severe cases, referral for can send with referral to Certified Hand Therapist in PT/OT dept. 206-8014 for appt. Will have evaluation for possible local steroid injections, ultrasound tx etc.

References

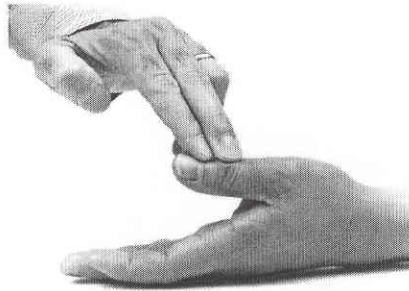
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Revised 11/2004, 12/2008, 1/2018

Phalen's Test. Hold the patient's wrists in acute flexion for 60 seconds. Alternatively, ask the patient to press the backs of both hands together to form right angles. These maneuvers compress the median nerve.



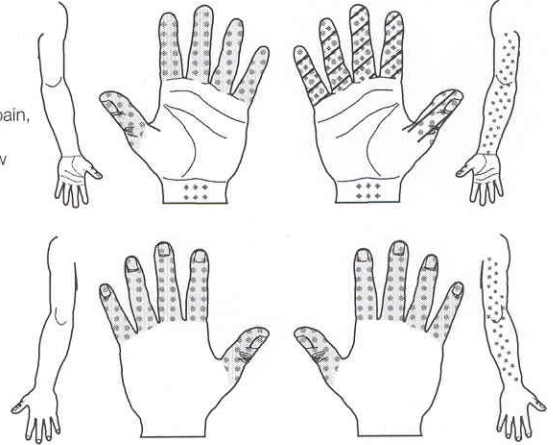
If numbness and tingling develop over the distribution of the median nerve (e.g., the palmar surface of the thumb, and the index, middle, and part of the ring fingers), the sign is positive, suggesting the carpal tunnel syndrome.

Figure 2. Testing Thumb Abduction


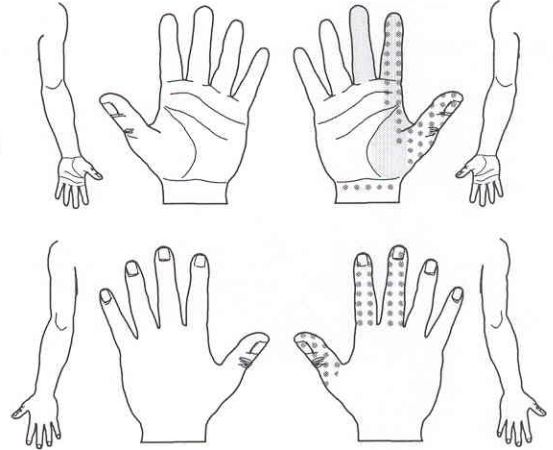
The patient is instructed to raise his/her thumb perpendicular to the palm as the examiner applies downward pressure on the distal phalanx. This maneuver reliably isolates the strength of the abductor pollicis brevis, which is innervated only by the median nerve.

Figure 3. Katz Hand Diagram
A Classic Pattern

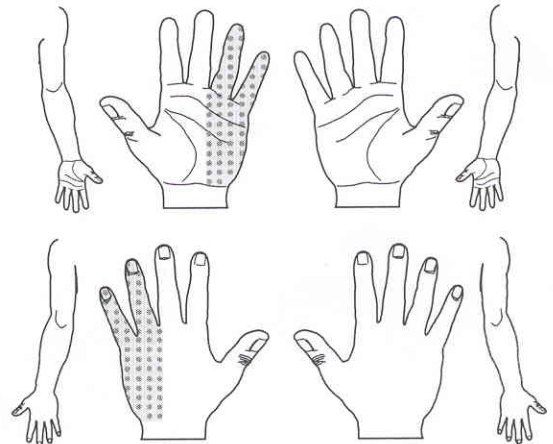
Symptoms affect at least 2 of digits 1, 2, or 3. The classic pattern permits symptoms in the fourth and fifth digits, wrist pain, and radiation of pain proximal to the wrist, but it does not allow symptoms on the palm or dorsum of the hand.


B Probable Pattern

Same symptom pattern as classic, except palmar symptoms are allowed unless confined solely to the ulnar aspect. In the possible pattern, not shown, symptoms involve only 1 of digits 1, 2, or 3.


C Unlikely Pattern

No symptoms are present in digits 1, 2, or 3.



■ Numbness ■ Pain ■ Tingling ▨ Decreased Sensation

Figure adapted with permission.⁶⁴

Carpal Tunnel Exercises

Carpal tunnel exercises should be done by individuals who perform hand-intensive jobs. These exercises should be performed at the start of each workday and during a break. It reduces the amount of pressure on the median nerve in the carpal tunnel and prevents injury. A few important exercises for avoiding the carpal tunnel syndrome are discussed below:

1. The most important thing to do is to get up from your desk and move around every 1/2 hour.
2. Extend and stretch both wrists and fingers acutely as if they are in a handstand position.
3. Straighten both wrists and relax fingers.
4. Make a tight fist with both hands and bend both wrists down.
5. Take your arms out to the sides with the palms facing down. Extend your fingers and stretch through the elbows. On exhaling, rotate your shoulders back and bring the palms facing up.

Nerve gliding exercises: Keep the wrist neutral and bend the fingers towards palm. Now straighten the fingers and bend the wrist and fingers backwards. Stretch the wrist, fingers and thumb backwards. Spread the wrist, fingers and thumb with the palm facing the ceiling.

Tendon gliding exercises: Keep the wrist neutral and stretch the thumb away with fingers straightened. Clench last 2 knuckles of each finger towards the palm with the wrist neutral. Slide the tips of the fingers as far past the palm and stretch thumb backwards while keeping the wrist neutral. These exercises should be repeated 10 times. Then the arms should be left hanging loosely at the sides. Shake them for a couple of seconds.

Cesarean Section History/ Previous Uterine Surgery

A. Definition

History of having had uterine surgery including LTCS, low vertical CS, vertical or classical CS or myomectomy.

B. Implications during Pregnancy

1. 75% of women who had CS are able to have a vaginal delivery
2. Women with one previous LTCS have less than 1% chance of uterine rupture
 - a. Prior LTCS done with past 24 months has a slightly higher risk than 1%
3. Women with unknown scar have a 1-10% chance of uterine rupture
4. Women with a hx of 2 prior LTCS have a 2-4% risk of uterine rupture
5. Women noted to have an extremely thin lower uterine segment on the operative report or those with a LTCS and extension into the active segment of the uterus will be counseled to avoid a TOL, since their risk of uterine rupture is significantly increased.
6. Women with multiple cesareans have an increased rate of placenta accreta (Incidence of placenta accreta 3%, 11%, 40%, 61% and 67% with hx 1-5 C/S), therefore desired family size should be considered with discussion of TOL.

C. Criteria for TOL consent

1. Hx previous CS, no more than 2 prior CS
2. No hx of uterine surgery other than LTCS
3. Please refer to Provider Instructions for Birth Choices for Women who have had Cesarean Birth for details of inclusion/exclusion criteria as well as approval process.

D. Diagnostic tests

1. Ultrasound to confirm dates
2. For poor dating an amnio for fetal lung maturity may be necessary

E. Plan

1. At the first visit, document reason for CS and events surrounding birth. These include:
 - a. Reason for C/S
 - b. Emergent/non-emergent?
 - c. Gestational age and fetal weight
 - d. Stage of Labor (dilation)
 - e. Where surgery was performed—small clinic? major hospital?
 - f. Type of physician performing surgery—Ob/Gyn? General Practitioner?
 - g. Did physician tell patient whether or not she could attempt a trial of labor?
2. Attempt to obtain an operative report, even if C/S was not done in this country
3. Attach a copy of the operative record to the prenatal chart.
4. Patients with history of uterine surgery or vertical or classical uterine incision should be seen in Moderate Risk clinic by the physicians at 34 weeks. They most often will have an amniocentesis at 36 weeks and then a repeat C/S scheduled at 36 weeks
5. Consent for birth choice and keep copy of signed consent in the antenatal record
6. For patients with unknown scars, consult with OB attending by telephone.
7. For those choosing TOL: Discuss with client the care on L+D (continuous fetal monitoring, IV or saline lock). Explain to the patient that the risks and benefits of TOL vs. C/S will be discussed with them again when they are in labor.
8. For those who choose to have cesarean birth:
 - a. Women can have midwifery care in the antepartum period

- b. All women requesting CS should be scheduled at 39 weeks.
- c. Fetal lung maturity should be confirmed if elective delivery is done before 39 weeks or for poor dating. Therefore, a consultation to the MD should be made prn and they will determine the need for an amniocentesis.
- d. An appointment should be made with the charge nurse on 6C and also the on call midwife notified to add pt to CNM C/S list. Do not schedule cesareans on 6C on Tuesdays or Thursdays before 1300.
- e. All women who will have a scheduled c/s should go to the anesthesia pre-op clinic:
 - i. Ideally appt is 1-3 days prior to c/s
 - ii. To get appointment do e-ref to the anesthesia pre-op clinic
 - iii. Anesthesia clinic is on the 4th floor, 4M72. Clinic phone number 6-5693.
- f. The client should be instructed to be NPO after midnight and given the date and time to come
- g. The CNM doing PP rounds should make sure that a FU clinic appt is made with the appropriate CNM.

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10. Silver et al (2006). Maternal morbidity associated with multiple repeat cesarean deliveries. Obstetrics and gynecology, 107(6), 1226-32.

Revised 06/2007, 06/2009, 01/2018

VBAC Provider Instructions

FOR BIRTH CHOICES AFTER CESAREAN BIRTH-- PATIENT INFORMATION AND CHOICE FORM

The "Birth Choices After Cesarean Birth - Patient Information and Choice Form" should be offered by the primary obstetrical care provider to women at or before 32 weeks who:

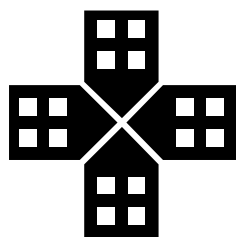
- I. Have had one previous cesarean birth.
- II. Have never had uterine surgery (i.e., myomectomy) other than a cesarean birth. (If the patient has had uterine surgery other than a cesarean, get as much information about it as possible before consulting with the OB attending by telephone and before offering the "Birth Choice After Cesarean Birth - Patient Information and Choice Form" to the patient.)
- III. Have never had a cesarean birth with a uterine incision in the upper part of the uterus ("classical" incision), or low transverse uterine incision with an extension into the upper part of the uterus (active segment). Most operative reports should document this.
 - A. If documentation of lower uterine segment incision is available, then the primary obstetrical care provider should offer the information for trial of labor to the patient.
 1. If the patient chooses a trial of labor, then file the signed "Birth Choices After Cesarean Birth - Patient Information and Choice Form" in the chart; no further consultation is necessary.
 2. If the patient chooses a repeat cesarean birth, then file the signed "Birth Choices After Cesarean Birth - Patient Information and Choice Form" in the chart. Refer the patient to the High Risk Obstetric Clinic for consultation at approximately 32 weeks.
 - B. If no documentation is available, gather as much history about the birth (or other uterine surgery) as possible, and consult with the OB attending by telephone to discuss whether a lower uterine segment incision was most likely.
 1. Important history to gather:
 - a. Gestational age and size of infant born
 - b. Presentation of fetus (vertex or breech)
 - c. Labor history (i.e., dilation of cervix at time of cesarean birth)
 - d. Circumstances of decision to perform a cesarean birth (emergency cesarean birth for non-reassuring fetal heart strip, placenta previa, arrest of descent, breech presentation)
 - e. Location of birth (i.e., rural or urban hospital or clinic)
 - f. Surgeon (i.e., obstetrician, general practitioner. General surgeon)
 - g. Verbal information from MD at time of cesarean about possibility of future trial of labor
 2. Page the OB attending at 443-1922 to discuss the case.
 - a. If the clinical situation likely resulted in a lower uterine segment incision, then offer the "Birth Choices After Cesarean Birth - Patient Information and Choice Form" to the patient so that she can consider a trial of labor. Counsel patient on item #3 of the "Birth Choices After Cesarean Birth - Patient Information and Choice Form" that her risk of uterine rupture based on her history or an unknown scar is 1-2%. However, it could be as high as 10% if she did have an incision in the upper part of her uterus.
 - i. If the patient chooses a trial labor, then file this signed form in the chart; no further consultation is necessary
 - ii. If the patient chooses a repeat cesarean birth, the file this signed form in the chart. Refer the patient to the High Risk Obstetric Clinic for consultation at approximately 32 weeks.
 - b. If the clinical situation likely resulted in an incision in the upper part of the uterus, then the patient should not be offered a trial of labor. Refer the patient to the High Risk Obstetric Clinic for consultation at approximately 32 weeks.

IV. Women who have had two low transverse cesarean births at term with operative reports for both surgeries may be counseled for trial of labor, with their risk of uterine rupture slightly increased at 2-4%. Similarly, women whose prior low transverse cesarean section was done within less than 24 months of expected delivery whose uterus was closed in a single layer (as opposed to two) may also be at a slightly higher risk of uterine rupture than the quoted <1%. Any women with more than two previous cesarean births or lack of operative reports for both must be referred to HROB clinic for their trial of labor counseling.

Document the clinical situation of prior cesarean births, your conversation with the OB attending and your conversation with the patient.

Please note:

- Any patient with a previous cesarean birth needs a routine ultrasound, ideally at 20 weeks gestation that includes an assessment of placental location.
- For clinics not located at SFGHMC, please fax the signed form to the Birth Center (206-4560). Include a cover letter stating "Please file in patient's shadow chart".



NAME

DOB

MRN

PCP

Birth Choices After Cesarean Birth - Patient Information and Choice
Form

Page 1 of 2

Patient ID / Addressograph

Birth Choices after Cesarean Birth - Patient Information and Choice Form

Even though you had a cesarean birth before, you may choose to try a vaginal birth or choose another cesarean birth for this pregnancy. There are both risks and benefits to trying a vaginal birth or choosing another cesarean. We want you to have the information that you need to make your choice. We want you and your baby to be healthy and we want you to feel good about your choice.

Please read the information below and talk about it with your provider.

1. VAGINAL BIRTH ADVANTAGES

Mothers who have vaginal births usually have less pain after the baby is born. Most recover faster and are able to go home sooner. There is less chance of getting an infection or needing a blood transfusion. Also, babies who go through labor have less breathing problems at birth. Finally, having a vaginal birth avoids the risks of having another cesarean (see number 4).

Many women who had a cesarean can try a vaginal birth. Your chances of being able to have a vaginal birth depend on why you needed a cesarean before. Reasons that had to do with the baby, like breech position (bottom first) or having twins, might not happen again. Reasons that have to do with your body, like a small pelvis, could make a vaginal birth less likely. About 75% of women who had a cesarean before are able to have a vaginal birth with their next pregnancy.

When you are in labor, your family or close friends can be with you. We will give you pain medicine if you want. We will watch you and your baby closely during labor. Sometimes the baby cannot be born through the vagina. If this happens, we will recommend another cesarean. Many women, however, try for a vaginal birth and are successful.

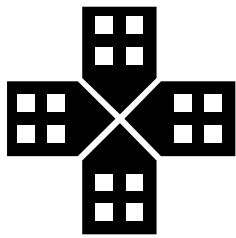
2. CESAREAN BIRTH ADVANTAGES

The main advantage of choosing another cesarean is that you have less risk of having the scar on your uterus open during labor (see number 3). If you decide to have a cesarean, you avoid the chance of having labor and then still needing a cesarean. This could happen if your labor does not progress or if the baby shows signs of stress during labor. Women who try to have a vaginal birth but then need a cesarean during labor may have more surgical problems than women who choose a cesarean before labor begins. Also, if you choose to have another cesarean, you probably will not have labor pains.

3. VAGINAL BIRTH RISKS

There is a small chance that the scar on your uterus from your cesarean could open up during labor. The risk of this happening depends on where your uterus was cut during your cesarean. If the scar from your cesarean is in the lower part of your uterus, the risk of it opening during labor is less than 1%. If you have had more than one cesarean or if your cesarean was recent (less than 2 years ago), the risk will be slightly increased that the scar could open during labor. If the scar is in the upper part of your uterus, there is much more risk that it could open in labor (as high as 10%). If you have a scar in the upper part of the uterus, we don't think you should try a vaginal birth.

Continue on page 2 of 2.



COMMUNITY HEALTH NETWORK
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NAME

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Birth Choices After Cesarean Birth - Patient Information and Choice
Form

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Patient ID / Addressograph

Continued from page 1 of 2

(3. Continued from previous page.)

If your provider does not know where your uterus was cut, your risk of the scar opening during labor is about 1-2%. It could be less than 1% if the scar is in the lower part of your uterus. It could be as high as 10% if the scar is in the upper part of your uterus.

If the scar on your uterus does open, you might need an emergency cesarean. You could bleed a lot and need a blood transfusion (blood from another person). You also could need a hysterectomy (removal of your uterus). There is a small chance that your baby or you could be injured or die.

4. CESAREAN BIRTH RISKS

If you are able to have a vaginal birth you can avoid some of the risks of a cesarean. For every 100 women who choose a cesarean, about 10 will have a problem. Two women get a wound infection, 6 get a fever, 1 needs a blood transfusion, and less than 1 will have an injury to her intestines, bladder or blood vessels. For every 1,000 women who have a cesarean, about 2 will need a hysterectomy (removal of uterus), usually because of bleeding. The more times you have a cesarean, the more likely you are to have one of these problems.

A cesarean can also cause scarring around the uterus. This scarring can make your next surgery more difficult. In another pregnancy, it can cause problems with the placenta and serious bleeding in a future pregnancy. Rarely, cesareans can weaken the uterus and the scar can open during another pregnancy.

5. I know I can change my choice at any time.

Put your initials next to your choice.

_____ I choose to try a vaginal birth.

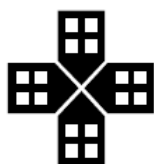
_____ I choose another cesarean.

I understand the information on this paper. I talked to my pregnancy care provider about this information. I had all of my questions answered.

Patient signature: _____ Date: _____
Print name Signature

Counseling Provider: _____ Date: _____ CHN ID #: _____
Print name Signature

Translator (if applicable): _____ Date: _____
Print name Signature



COMMUNITY HEALTH NETWORK
OF SAN FRANCISCO

Birth Choices After Cesarean Birth – Patient
Information & Choice Form

Página 1 de 2

NAME

DOB

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PCP

Patient ID/Addressograph or Label

Elecciones de tipos de parto luego de una cesárea - Información para la paciente y forma de elección

Aunque usted tuviera una cesárea previa, usted puede decidir intentar un parto vaginal o elegir tener otra cesárea para este embarazo. Hay tantos riesgos como beneficios en intentar un parto vaginal o elegir otra cesárea. Queremos que usted tenga la información que necesita para hacer su elección. Queremos que usted y su hijo estén sanos y queremos que usted se sienta conforme con su elección. Sírvase leer la siguiente información y hable sobre ello con su médico(a) o matrona .

1. VENTAJAS DEL PARTO VAGINAL

Las madres que tienen partos vaginales generalmente tienen menos dolor después de que el niño nace. La mayoría se recupera más rápido y puede regresar antes a casa. Hay menos posibilidades de contraer una infección o necesitar una transfusión de sangre. Además, los niños que pasan por el trabajo de parto tienen menos problemas respiratorios al nacer. Finalmente, tener un parto vaginal evita los riesgos de tener otra cesárea (ver número 4).

Muchas mujeres que tuvieron una cesárea pueden intentar un parto vaginal. Sus posibilidades de poder tener un parto vaginal dependen de por qué usted necesitó una cesárea anteriormente. Las razones que tuvieron que ver con el niño (como la posición de nalgas) o el tener gemelos, lo mas probable es que no sucedan nuevamente. Las razones que tienen que ver con su cuerpo, como una pelvis pequeña, podrían hacer menos probable un parto vaginal. Cerca del 75% de las mujeres que tuvieron una cesárea anteriormente, pueden tener un parto vaginal con su próximo embarazo.

Cuando usted está en trabajo de parto, su familia o sus amigos cercanos pueden estar con usted. Si usted lo desea, le daremos un medicamento para dolor. Vigilaremos estrechamente a usted y a su bebe durante el trabajo de parto. A veces el niño no puede nacer a través de la vagina. Si sucede ésto, le recomendaremos otra cesárea. Muchas mujeres, sin embargo, intentan un parto vaginal y tienen éxito.

2. VENTAJAS DE UNA CESÁREA

La ventaja principal de elegir otra cesárea es que usted tiene menos riesgo de que la cicatriz en su útero se rompa durante el trabajo de parto (ver número 3). Con una cesárea también evita la posibilidad de tener trabajo de parto sin éxito y después necesitar una cesárea. Esto podría suceder si no progresa su trabajo de parto o si el niño muestra signos de estrés durante él mismo. Las mujeres que tratan de tener un parto vaginal pero luego necesitan una cesárea durante el trabajo de parto, pueden tener más problemas quirúrgicos que las mujeres que eligen una cesárea antes de que empiece el trabajo de parto. Además, si usted decide tener otra cesárea, probablemente no tendrá dolores de trabajo de parto.

Continúa en la página 2 de 2.

(Rev. 01/04)

Original – Medical Record
Hoop. Produced WEBSITE form. Spanish translation of 5799016.

Photocopy for patient

Fax copy to SFGHMC Birth Center if original kept in off-campus record

Continuación de la página 1 de 2.

3. RIESGOS DEL PARTO VAGINAL

Hay una pequeña posibilidad de que la cicatriz en su útero por su cesárea pudiera abrirse o romperse durante el trabajo de parto. El riesgo de que esto suceda depende de donde fue cortado su útero durante su cesárea. Si la cicatriz de su cesárea está en la parte inferior de su útero, el riesgo de que se abra durante el trabajo de parto es de menos del 1%. Si usted ha tenido más de una cesárea o si su cesárea fue reciente (hace menos de 2 años), se aumentará levemente el riesgo de que la cicatriz pueda abrirse o romperse durante el trabajo de parto. Si la cicatriz está en la parte superior de su útero, hay mucho más riesgo de que pudiera romperse en el trabajo de parto (tan alto como un 10%). **Si usted tiene una cicatriz en la parte superior del útero, pensamos que usted no debe intentar un parto vaginal.**

Si su médico(a) o matrona no sabe donde fue cortado su útero, el riesgo de la rotura de la cicatriz durante el trabajo de parto es de cerca del 1-2%. Podría ser menos del 1% si la cicatriz está en la parte inferior de su útero. Podría ser tan alto como un 10% si la cicatriz está en la parte superior de su útero.

Si se rompe la cicatriz en su útero, usted podría necesitar una cesárea de emergencia. Usted podría sangrar mucho y necesitaría una transfusión de sangre (sangre de otra persona). Usted también podría necesitar una histerectomía (remoción de su útero). Hay una pequeña posibilidad de que su bebé o usted puedan ser lesionados o morir.

4. RIESGOS DE NACIMIENTO POR CESÁREA

Si usted tiene un parto vaginal, puede evitar algunos de los riesgos de una cesárea. De cada 100 mujeres que eligen una cesárea, cerca de 10 tendrán un problema. Dos mujeres contraen una infección de la herida, 6 contraen fiebre, 1 necesita una transfusión de sangre y menos de 1 tendrá una lesión en sus intestinos, vejiga, o los vasos sanguíneos. De cada 1000 mujeres que tienen una cesárea, cerca de 2 necesitarán una histerectomía (remoción del útero), generalmente debido al sangrado. Cuantas más veces usted tiene una cesárea, hay más probabilidades de que tenga uno de estos problemas.

Una cesárea también puede causar cicatrización alrededor del útero. Esta cicatrización puede hacer más dificultosa su próxima cirugía. En otro embarazo, puede causar problemas con la placenta y hemorragia grave en un embarazo futuro. Rara vez, las cesáreas pueden debilitar el útero y la cicatriz abrirse durante otro embarazo.

5. Sé que puedo cambiar mi elección en cualquier momento.

Ponga sus iniciales al lado de su elección.

_____ Elijo intentar un parto vaginal. (I choose to try a vaginal birth.)

_____ Elijo otra cesárea. (I choose another cesarean.)

Comprendo la información de este documento. Conversé con mi médico(a) o matrona acerca de esta información. Todas mis preguntas fueron respondidas.

Firma del paciente: _____ Fecha: _____

Proveedor de Orientación: _____ Fecha: _____ CHN ID #: _____
Counseling Provider Print name Signature Date

Traductor (sí es aplicable): _____ Fecha: _____
Translator (if applicable) Print name Signature Date

Chlamydia

A. Definition

Chlamydia is an STI that is the most commonly reported infectious disease in the U.S. It is an obligate intracellular gram negative bacterium that is very small in size and that acts like a parasite, entering cells and using their energy.

B. Risk factors

1. Adolescents and young adults (age is the strongest predictor)
2. Multiple sex partners or a partner with other partners during the last three months or a recent new sex partner
3. Inconsistent use of barrier contraceptives
4. Clinical evidence of mucopurulent cervicitis
5. Cervical ectopy
6. Unmarried status
7. History of prior sexually transmitted disease
8. Lower socioeconomic class or education not beyond high school
9. (citations 2-6)

C. Signs and Symptoms

1. Most women with early-stage chlamydia infection have no symptoms
2. Most common symptom is increased or abnormal vaginal discharge that develops about 14 days after infection
3. Some women also have a strong vaginal odor
4. Other symptoms may be dysuria, unusual vaginal bleeding, bleeding after sex, or lower abdominal pain
5. Cervix may become friable

D. Diagnosis

1. LCR testing is used to diagnose chlamydia either by endocervical swab, vaginal swab or by first-stream urine
2. Endocervical swab is the preferred method, as it is more sensitive
3. The lab slip used is special for GC and Chlamydia, not the microbiology requisition

E. Clinical Implications in Pregnancy

1. Increased risk of PROM and lowbirth weight
2. IOF neonates born to infected mothers approximately 20-50% develop inclusion conjunctivitis and about 20% develop a late-onset pneumonia (4-11 weeks of age)
3. There is also an association between postpartum endometritis and chlamydia infection during pregnancy
(Up to Date)

F. Management

Diagnostic

1. All pregnant women should be re-tested >3 weeks after treatment
2. Offer repeat HIV testing
3. All women who are at high risk for Chlamydia infection including all teens, should be rescreened at 36 weeks.

Therapeutic

1. Ideally treat by dispensing in-clinic treatment, Azithromycin 1 gm stat
2. For WHC order via Treatment and In-Clinic Dispense
3. Make sure medication is appropriately labeled
4. It is recommended that all of the woman's sexual partners for the preceding 60 days (or the last partner if >60 days) be treated. Partner treatment can also be given as in-clinic dispense, or can be ordered via a pharmacy: order the medication (same) and say "dispense for patient to use for partner treatment". Some pharmacies will question this practice (though it's legal), so it is important to include a phone number where they can contact you with questions. If you need to order for multiple partners order as refills.
5. A less good option for partner treatment is to give the patient information about the City Clinic, 356 7th St between Folsom and Harrison 864-8100. Teen males can be treated at New Generation Health Center.
6. Dispense condoms.
7. Go to the NP/PA office and find the STI binder to record that you've treated the patient. In the NP/PA office, find and fill out a CMR form. There should be copies of this form in the binder but if for some reason there aren't, you can download forms at <http://dphnet.dph.sf.ca.us/Forms/FormSrc/CommDiseasesRptableyCMR062007.pdf>.
8. Fax CMR to the number indicated on the form.

Education

1. Women and their partners (if possible) should be counseled re: all STIs, including HIV. If HIV testing has not been done recently it should be strongly encouraged.
2. Women and their partners should be counseled to abstain from risky sexual behaviors until after the woman's test of cure. If this is not realistic, encourage abstinence until >7 days after treatment of both the woman and her partner, or encourage use of condoms.
3. Do TOC 2-3 weeks after treatment is completed.
4. Re-screen for STIs at 36 weeks.

References

1. California Treatment Guidelines
2. Gaydos, CA, Howell, MR, Pare, B, et al. Chlamydia trachomatis infections in female military recruits. N Engl J Med 1998; 339:739.
3. Cook, RL, St. George, K, Lassak, M, et al. Screening for Chlamydia trachomatis infection in college women with a polymerase chain reaction assay. Clin Infect Dis 1999; 28:1002.
4. Immunization of health-care workers: recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC). MMWR Recomm Rep 1997; 46:1.
5. Recommendations of the International Task Force for Disease Eradication. MMWR Recomm Rep 1993; 42:1.
6. Phillips, RS, Hanff, PA, Holmes, MD, et al. Chlamydia trachomatis cervical infection in women seeking routine gynecologic: Criteria for selected testing. Am J Med 1989; 86:515.
7. Up to Date, 2008.

Revised 11/2006, 08/2009, 01/2018

Cholestasis

A. Definition

Intrahepatic Cholestasis of Pregnancy (IHCP) is characterized by the accumulation of bile acids in the liver and in the plasma. The cause is unknown. However, it is thought to be linked to estrogen. This condition is associated with pruritus and mild jaundice usually occurring in the third trimester. Cholestasis is more commonly observed among Hispanic and Swedish populations. Of women who have classic symptoms for IHCP, 20% have normal labs and are considered to have a non-specific pruritis that is not associated with adverse outcomes.

B. Clinical Implications

1. IUFD risk is 1-5%. ANT has not been proven to have any effect on reducing this risk, however it is considered standard practice in these high risk pregnancies.
2. Prematurity: risk of preterm labor is as high as 36- 44%, some but not all of which is iatrogenic
3. Meconium staining (25-60%)
4. Fetal distress (22-33%)
5. Post Partum Hemorrhage (20%) induced by Vit K deficiency; cholestasis contributes to fat soluble vit def (Gabbe, 2002)
6. Recurrence in subsequent pregnancies 60-70%
7. May be at increased risk for gallstones

C. Signs and symptoms

1. Body itching classically starting on the palms and soles, often sparing the face
2. Itching is worse at night
3. Absence of rash
4. Jaundice is uncommon (10% or less)
5. absence of abdominal pain
6. More common with a family history of cholestasis of pregnancy
7. Tends to recur with subsequent pregnancies
8. Resolution of itching is not consistent with cholestasis
9. More prevalent in winter months

D. Diagnostic Criteria

1. Cholestasis is a diagnosis made purely by symptoms unrelieved for 3 days. Diagnoses can be confirmed with elevated bile acids
2. Differential Diagnosis:
 - a. Underlying liver disease
 - b. Hepatitis
 - c. Biliary obstruction
 - d. Fatty liver of pregnancy
 - e. Lymphoma
 - f. Leukemia
 - g. PUPPS

E. Plan

Diagnostic

1. Review dating
2. Labs:
 - a. CBC with differential (leukemia & lymphoma may also present as whole body itching)
 - b. LFTs (AST and ALT may be increased with cholestasis)

- c. If LFTs are elevated, do hepatitis panel to r/o hepatic disease
- d. Total Bile Acids (TBA): same as bile salts, no fasting necessary, send-out lab that takes about 4 days for results, 20% false negative rate. Management: repeat TBA q week until delivery.
- e. Patient with pruritis + normal labs do not have IHCP. 20% of all pregnant women with symptoms have a non-specific pruritis that has not been associated with adverse outcomes
3. Weekly ANT starting at 32 weeks or the onset of diagnosis if > than 32 weeks (though there is no evidence that ANT is at all effective).
4. Delivery planning, based on email communication from J Vargas (see next page for actual email):
 - a. Symptoms with normal labs, <37 wks: no IOL indicated. Obtain serial every 1-2 weeks from onset of symptoms. These patients do not have IHCP; 20% of women complain of itching, and it is very non-specific. Patients with pruritus and normal BA and LFTs have not been associated with adverse perinatal outcomes.
 - b. If abnormal BA (>10), management depends on value:
 - o 10-20, IOL at 37-38 wks
 - o >20-70, IOL at 37 wks
 - o >70, consider IOL at 36 wks with +fetal lung maturity
 - c. If symptoms of ICP with unknown TBA at ≥ 37 wks: IOL if LFTs abnormal; if normal, wait for TBA results, get ANT
 - d. Patients with IHCP will get BA and LFTs repeated on admission

Therapeutic

1. Aveeno baths, cool shower, calamine lotion
2. Benedryl 25-50 mg po q4-6h prn with food, helpful at night for better sleep, but no better than placebo for itch.
3. Actigall (ursodeoxycholic acid) 300mg BID is the treatment of choice (a naturally occurring bile acid usually used to dissolve gallstones).
4. See alternative treatments listed below
5. Induction at 37-38 weeks if elevated bile acids. Consider induction at 36 weeks if bilirubin is elevated, ripe cervix, poor obstetrical history, or severe itching not responsive to treatment.
6. Consider sweeping membranes at 36 weeks or when able

Education

1. Recurrence rate is 60-70% in subsequent pregnancies.
2. Signs and symptoms of PTL
3. Kick counts
4. Discuss need for induction, methods of induction...Discuss need for continuous fetal monitoring in labor and delivery.

Follow up

1. Send pt to High Risk OB for MD consult. If induction indicated before high risk visit e-mail Juan Vargas with pt name and B# and date of induction.
2. Pruritis resolves within a few days postpartum. If symptoms persist, refer to gastroenterologist.
3. Prepare for PPH and continuous FHR monitoring in labor

References

1. Hirvioja, ML, Kivinen, S. Inheritance of intrahepatic cholestasis of pregnancy in one kindred. Clin Genet 1993; 43:315.
2. Pusch, T, & Beuers, U. (2007). Intrahepatic cholestasis of pregnancy. Orphanet Journal of Rare Diseases, vol. 2, p26.

3. Ropponen, A, Sund, R, Riikonen, S, et al. Intrahepatic cholestasis of pregnancy as an indicator of liver and biliary diseases: a population-based study. *Hepatology* 2006; 43:723.
4. Saleh, MM, & Abdo, KR. (2007). Intrahepatic cholestasis of pregnancy: review of the literature and evaluation of current evidence. *Journal of Women's Health*, 16(6), 833-41.
5. Wong, L F, Shallow, H, & O'Connell, M P. (2008). Comparative study on the outcome of obstetric cholestasis. *Journal of Maternal - Fetal & Neonatal Medicine*, 21(5), 327-30.

Revised 03/2006, 05/2009, 01/2018

Alternative treatment/prevention

1. Milk Thistle (*Silybum marianum*) standardized to contain 70% silymarin 200 mg BID
 - a. The use of Milk Thistle is not restricted during pregnancy according to the German Commission E Monographs and the Botanical Safety Handbook
 - b. See additional information in Appendix.
2. Guar Gum
 - a. Guar gum is an inexpensive soluble fiber, used in foods as a thickener and emulsifier
 - b. Guar gum is a gel-forming fiber, which increases fecal elimination of bile acids. It may therefore be beneficial in the treatment of intrahepatic cholestasis of pregnancy.
 - c. It is also used as a bulk laxative and to treat diabetes, as it slows the absorption of carbohydrates and stabilizes the blood sugar
 - d. It increases the presence of beneficial flora (bifidobacteria) in the gut
 - e. Because it causes changes in the intestinal flora, initially there may be side effects of gas, bloating or diarrhea. These symptoms will resolve as the body adapts.
 - f. It is available in capsules or in a powder which may be stirred into drinks, sprinkled onto food, or baked into baked goods.
 - g. Start at a low dose i.e. ½ teaspoon or 1 capsule once or twice a day, slowly work up to 5 gm daily, in divided doses.
 - h. Always take each dose with a full glass of liquid.

Colposcopy Clinic Referrals

A. Who

Colposcopy clinic referrals should be made for women with the following:

1. Two consecutive ASCUS results on pap smear
2. 2 out of the last 3 pap smears with ASCUS
3. One result of ASCUS (optional)
4. Cannot exclude HSIL, AGUS, HGSIL, LGSIL on pap smear

B. How

Procedure

1. Have RN make appointment with Colposcopy clinic.
2. Please make sure to fill out a consult slip including significant gyn hx and pap results.
3. If client does not have MediCal, please note that she can apply for California Breast and Cervical Cancer Prevention Program (please refer to Breast Mass protocol for information on application process).

Revised 11/2003, 08/2009

Common Discomforts of Pregnancy (see also Appendix M for Herbal Options)

Backache and Round Ligament Pain

A. Definition

1. Backpain is caused by lordosis of the spine from the weight of the uterus pulling the spine out of alignment as well as relaxed ligaments and pelvic joint changes.
2. Upper backpain is due to the weight of the breasts and postural factors.
3. Sciatica: a sharp or burning pain radiating down the posterior or lateral aspect of the leg, usually to the foot or ankle due to disk protrusion of the vertebral disk pressing on the sciatic nerve as well as compression of L4-5 roots and sacroiliac joint by the enlarged uterus.
4. Round Ligament pain is caused by round ligament stretching as the uterus enlarges.

B. Diagnosis

1. R/O PTL, UTI, muscle strain from trauma
2. Hx of pain/sxs
3. Neuro exam: numbness, paresthesia, weakness

(Note: If there are not sciatica or neurological symptoms, the prevalence of neurological impairments is so low that extensive neurological evaluation is usually unnecessary. The likelihood of disk herniation in a patient without sciatica is estimated to be less than one in 1000.)

4. R/O Disc involvement:
 - a. Passive straight leg raise from the supine position.
 - b. Positive sign is if the sciatic pain is reproduced between 30 and 70 degrees. (sensitivity 0.80; specificity 0.40)
 - c. Crossed straight leg raise: straight leg raising of the patient's well leg is performed (sensitivity 0.25; specificity 0.90)
 - d. Weakness of the ankle and great toe dorsiflexors, (dorsiflexion against resistance from the examiner's hands) sensitivity 0.35/0.50; specificity 0.70; 0.60. and diminished ankle reflexes may be present if there is disk herniation.

C. Management

Therapeutic

1. Abdominal support is very helpful and now covered by MediCal. Preprinted prescriptions and directions to the CPD office in the basement forms are in a folder on the health ed files in the midwife office. Pt should take the form to CPD to get a pregnancy support/faja.
2. Stretching exercises
 - a. Pelvic rocks/cat stretch
 - b. Teach/demonstrate Hamstring stretches and piriformis stretches (see attached diagrams): start with 10 second stretches TID, increase to holding the stretch for 30 seconds TID
 - c. Piriformis release: Two tennis balls put in a sock, knotted, lie supine with knees bent, put balls under low back and gently lower back onto balls, massaging tight areas and/or one tennis ball in hip/gluteal /piriformis/low back areas with patient standing, leaning against wall.
3. Warm baths and showers
4. Prenatal yoga
5. Demonstration of proper body mechanics and good posture
6. Continuous low-level topical heat packs (i.e. Curaheat from pharmacy) and/or heating pad, hot water bottle, or rice-filled socks heated in microwave. Use 20 minutes BID/TID
7. Tylenol for pain
8. Massage

Education

1. Wear low heel or flat supportive shoes
2. Wear supportive bra for upper back pain
3. Teach positions for relaxation (side-lying with support of pillows or knee- chest position)
4. Encourage regular exercise (eg. walking, swimming)
5. Avoid sitting for long periods & frequent position changes
6. When sitting put feet on stool or box

References

1. Abdul_Wahab, T. Al-Khodairy (2007). Sciatica in the female patient : anatomical considerations, aetiology and review of the literature. European Spine Journal 16 (6) 721-731
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3. Pennick, VE, & Young, G. (2007). Interventions for preventing and treating pelvic and back pain in pregnancy. The Cochrane database of systematic reviews, (2)
4. 2005). Back pain during pregnancy. Journal of midwifery & women's health, 50(5), 437-8.

Revised 12/2004, 05/2009

Constipation

A. Definition

Constipation is caused by hormonal influence on GI, relaxation of intestinal smooth muscle and decreased intestinal motility.

B. Management

Diagnostic

1. 24-hour diet recall including all fluids consumed
2. Assess normal and current bowel pattern
3. Assess prior and current use of laxatives

Therapeutic

1. Bulk forming laxatives: Metamucil 1 packet in water PO QD-TID prn
2. Stool softeners: Colace 100mg PO BID prn
3. If severe:
 - a. MOM 2-4 Tablespoons PO, followed by glass of water
 - b. Glycerin suppository 3gm per rectum one time
 - c. Bisacodyl 10 mg PO one time
 - d. Fleets enema (if no increased risk for PTL/PTD)
4. Abdominal massage in a clockwise direction to stimulate peristalsis (Sweet, 1997)
5. Dandelion root tea is traditionally used for constipation, and is on the FDA GRAS (Generally Regarded as Safe) list.

Education

1. Increase PO fluids (client should be drinking 8 8-ounce glasses of water daily at least)
2. Encourage regular exercise
3. Dietary changes to increase fiber intake (fruits TID, vegetables with lunch and dinner, bran, whole grains, oatmeal for breakfast) and to add foods that stimulate the bowel (prunes, prune juice, and hot fluids)

Revised 12/2008

Dizziness/Fainting

A. Definition:

Dizziness is commonly caused by postural hypotension in later pregnancy due to hormonal smooth muscle relaxation of vessels. Hypoglycemia can also cause dizziness. Supine hypotensive syndrome occurs in late pregnancy and is experienced when women lie in the supine position. It is caused by the compression of the inferior vena cava by the heavy gravid uterus.

B. Management:

Diagnostic

1. Assess presence of associated environmental factors
2. Assess BP, pulse
3. Assess normal cardiac rate and rhythm
4. Assess for presence of pathology (anemia, hypoglycemia, cardiovascular disease, neurologic disease)

Therapeutic

1. Elastic stockings can be ordered from General Medical Supply or Bell Pharmacy (to decrease venous pooling). Fill out form and give to RN to fax. Must include leg measurements.

Education

1. Slow position change
2. Avoid long periods of sitting or standing
3. Adequate fluid intake
4. Small frequent meals
5. Avoid activities that would be dangerous if loss of balance occurs (eg. climbing ladders)
6. Discourage lying on back

Follow up

1. Consult MDs for loss of consciousness with possible injury

Revised 12/2008

Headaches

A. Definitions

Tension headaches: most common and are caused by tension and muscle spasm in the neck and back muscles.

Migraine headaches: are influenced by hormones of pregnancy and are normally worse in the first trimester.

Other: sinus headache, headache from eye strain, benign vascular headache of pregnancy and headache associated with pre-eclampsia.

B. Differential diagnosis

The exact etiology of headaches in pregnancy is unclear, but it is thought that they are estrogen related. A woman with a prior history of headaches may continue to suffer from them during pregnancy; pursuing a complicated duplication of diagnostic testing is not necessary if her characteristic symptoms have not changed. However, the presence of new focal neurological signs is also an indication for an in depth evaluation, which may include neuroimaging (Ramchandren, 2007).

1. Tension headache

- a. Often begins in the morning and gets progressively worse throughout the day
- b. Dull, persistent pain
- c. Suboccipital, occipital, bilateral, like a constrictive band of tightness
- d. May radiate to back and neck
- e. May last for days

2. Migraine headache

- a. Severe, throbbing
- b. Usually unilateral, supraorbital or frontotemporal
- c. Prodrome or aura may precede
- d. Associated symptoms are common (vomiting, photophobia, scotoma)
- e. Most women (48-79%) experience improvement of migraines during pregnancy

3. Sinus headache

- a. Pain over sinuses

4. Benign vascular headache of pregnancy

- a. Mild, throbbing, bifrontal
- b. Usually limited to first trimester
- c. May occur daily for weeks

5. Pre-eclampsia related HA

- a. HA accompanied by a diagnosis of pre-eclampsia
- b. Diffuse, constant and mild to severe in intensity

C. Ruling out a dangerous headache

1. The absence of similar headaches in the past is a finding that suggests a possible serious disorder. The "first" or "worst" headache of my life is a description that sometimes accompanies an intracranial hemorrhage or central nervous system (CNS) infection. On the other hand, patients suffering from migraine usually have had similar types of headaches in the past.
2. A worsening pattern of headache suggests a mass lesion, subdural hematoma, or medication overuse headache.
3. Focal neurologic symptoms other than typical visual or sensory aura should raise suspicion for a mass lesion, arteriovenous malformation, or collagen vascular disease.
4. Fever associated with headache may be caused by intracranial, systemic, or local infection, as well as other etiologies. Infection in a non-intracranial location (such as the lungs or paranasal or mastoid

sinuses) may serve as a nidus for the development of meningitis or intracranial abscess. Fever is not a characteristic of migraine headache; it may, however, follow a subarachnoid hemorrhage by a few days.

5. Any change in mental status, personality, or fluctuation in the level of consciousness suggests a potentially serious abnormality.
 6. The rapid onset of headache with strenuous exercise, especially when minor trauma has occurred, raises the possibility of carotid artery dissection or intracranial hemorrhage.
 7. Head pain that spreads into the lower neck and between the shoulders may indicate meningeal irritation due to either infection or subarachnoid blood; it is not typical of a benign process.
 8. Meningismus (resistance to passive neck flexion), papilledema, decreased level of consciousness or neurologic abnormalities on exam merit a neuro consult.
- (Up to Date)

D. Management

Diagnostic

1. Assessment of onset frequency, location, quality, associated symptoms, precipitating factors, aggravating or alleviating measures (see above)
2. Neuro exam
 - a. A functional neurologic examination including getting up from a seated position without any support, walking on tiptoes and heels, cranial nerve examination, fundoscopy and otoscopy, tandem gait and Romberg test, and symmetry on motor, sensory, reflex and cerebellar (coordination) tests.
3. EENT exam with exam of sinuses
4. Assess neck for ROM and tenderness
5. VS assessment for signs of infection
6. Rule out headache associated with pre-eclampsia

Therapeutic

1. Tylenol 650mg PO q4-6 hours prn
2. Tylenol with Codiene (TYCO #3) 2 tabs P.O. Q6H
3. Vicodin 1-2 tabs q4-6 hours prn severe headaches
4. Consider caffeinated beverage
5. Antiemetics for migraines
6. Massage, moist heat to neck
7. Cold application to forehead
8. Head and neck rolling
9. Peppermint essential oil, one-two drops applied to finger and swiped across forehead, or Tiger Balm, small amount applied in a similar fashion (do not get near the eyes)

Education

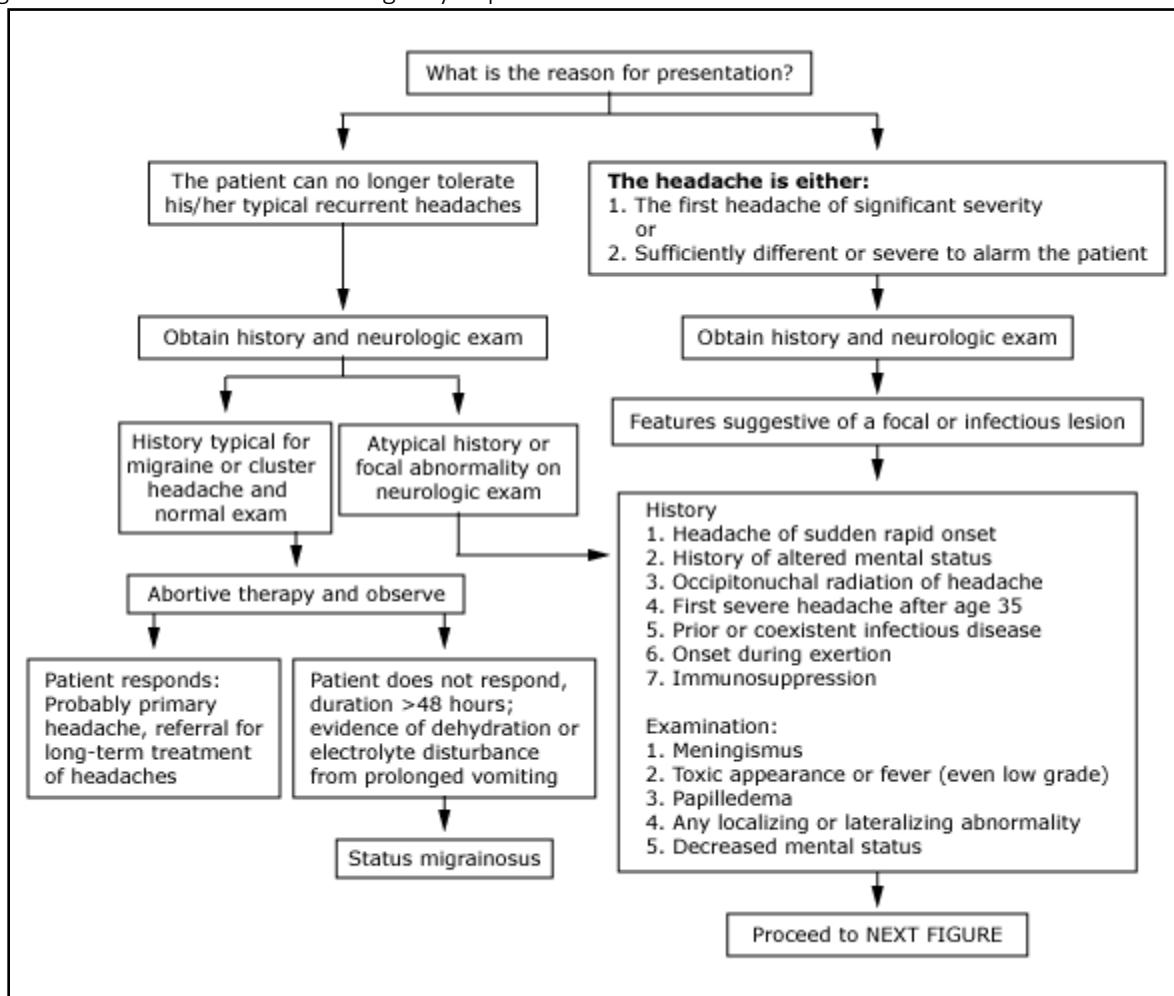
1. Disc tension reduction techniques
2. Exploration of possible triggers (should try to avoid)
3. Disc environmental factors that can precipitate (loud noise, strong odors, cigarette smoke, bright lights) or alleviate (quiet, dark room) headaches
4. Advise adequate rest and sleep
5. Advise eating at regular intervals
6. Disc dietary causes: nitrites (hotdogs and bacon), tyramines (chocolate, cheese and red wine), and MSG

Follow up

1. Consult with MD for severe headache or abnormal exam

How to Manage a Headache in the Emergency Department (part 1)

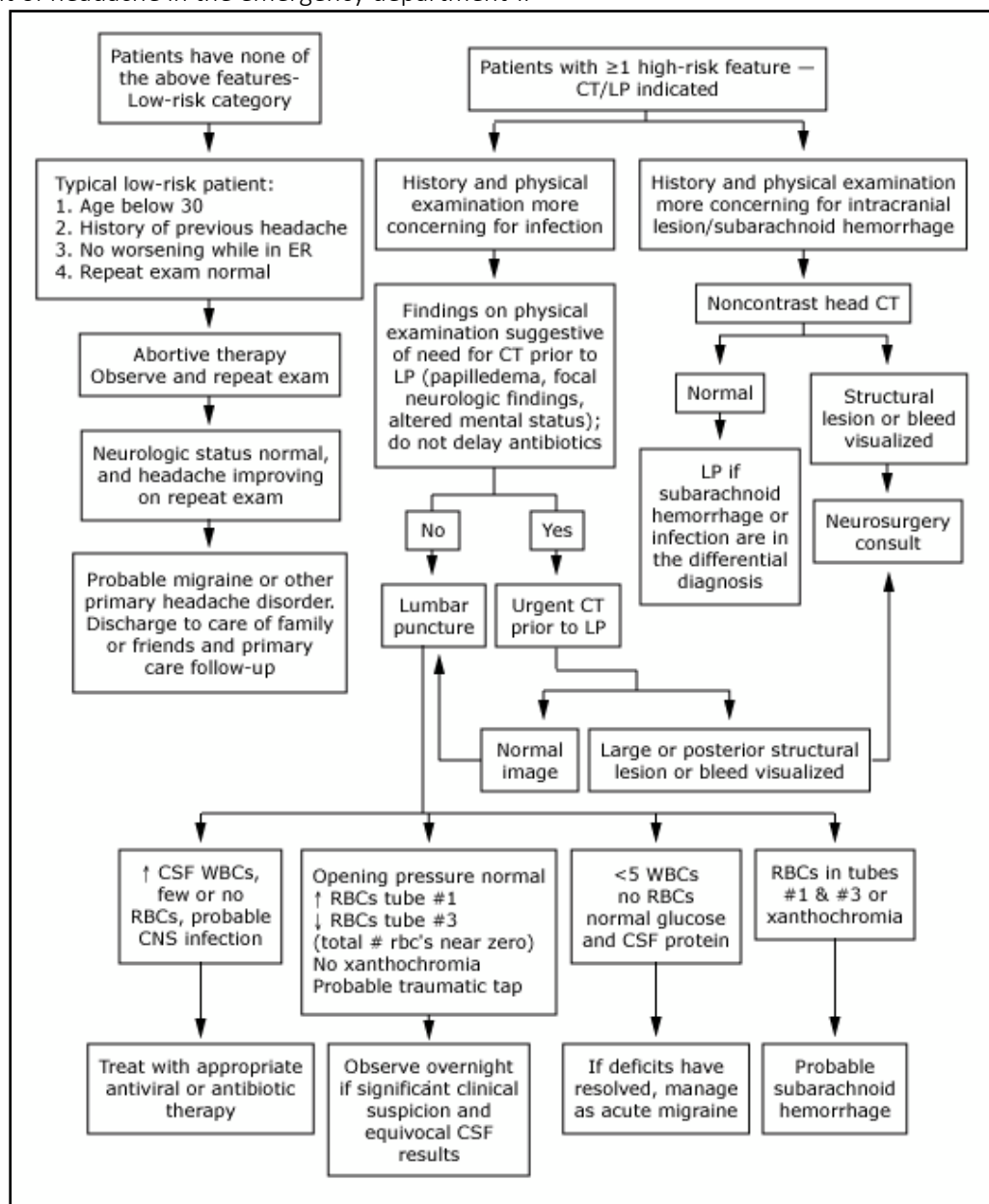
Management of headache in the emergency department-I



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How to Manage a Headache in the Emergency Department (part 2)

Management of headache in the emergency department-II



CT: computed tomography scan; LP: lumbar puncture.

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Revised 05/2009

Heartburn – GERD

See protocol for GERD

Nausea and Vomiting

A. Definition and Risk:

Nausea and vomiting is caused by hormonal changes in pregnancy or psychosocial factors. 50-80% of all pregnant women experience nausea and/or vomiting during the first trimester and 5% will have symptoms throughout pregnancy.

This is different from Hyperemesis Gravidarum which results in dehydration, electrolyte imbalance (hypokalemia) and weight loss > 5% of initial body weight.

- Risk factors for Hyperemesis include: Hyperthyroid (OR 4.5), Diabetes (OR 2.6), previous GI disorder (OR 2.5), previous molar pregnancy (OR 3.3), multiple gestation (OR 3.7), previous psychiatric disorder (OR 4.1), maternal age >30 (OR.5), smoking (OR.5)

B. Clinical Implications:

1. Low birth weight babies
2. Risk of pregnancy loss
3. IUGR

C. Management

Diagnostic

1. Evaluate pattern and frequency of nausea and vomiting

Can use “PUQE” (Pregnancy-Unique Quantification of Emesis/nausea) index:

“PUQE” INDEX				
1. In the last 12 hours, how many hours have you felt nauseated or sick to your stomach?				
> 6 hrs (5 pts.)	4-6 hrs (4 pts)	2-3 hrs (3 pts)	≤ 1 hr (2 pts)	Not at all (1pt)
2. In the last 12 hours, how many times have you vomited?				
7 or more (5 pts)	5-6 (4 pts)	3-4 (3 pts)	1-2 (2 pts)	None (1 pt)
3. In the last 12 hours, how many times have you had retching or dry heaves without bringing anything up?				
7 or more (5 pts)	5-6 (4 pts)	3-4 (3 pts)	1-2 (2 pts)	None (1pt)
Score: MILD: < 6; MODERATE: 7-12; SEVERE: ≥ 13				

Koren G et al 2002

2. Assess for severe N/V (excessive weight loss, ketonuria)
3. Assess for s/sx dehydration (tachycardia, dizziness, dry mucous membranes, sunken eyes, inability to any food or fluid down, elevated urine SG)
4. If severe: electrolytes
5. Consider sonogram to rule out twins or molar pregnancy
6. Consider work up for risk factors associated with hyperemesis
7. Evaluate for coexisting acid reflux
8. If third trimester, rule out HELLP
9. If persistent/severe with epigastric pain or coffee ground emesis: lipase, LFTs, TFTs

Therapeutic

1. Seabands Seabands (wear all the time) available at Walgreens, named "Travel-eze" cost is \$10.00
2. Ginger, chamomile, fennel, Rooibos, anise, raspberry leaf and cinnamon tea po prn
3. Vit B6 25-50mg po TID-QID, not to exceed 200mg QD after meals
4. Hard candies, ginger candies
5. Sips of flat ginger ale or cola
6. Ginger capsules 250mg po QID
7. Switch to a prenatal vitamin without iron. Continue multivitamins if at all possible, since women on prenatal supplements have a lower incidence of hospitalization for NVP
8. Refer to below table for pharmacologic therapy:

Generic name (trade name)	Dosage
Antihistamines	
Doxylamine (Unisom)*	25 mg tab: ½ tab BID and 1 tab QHS. Note: can be substituted with Benadryl 25 mg, medications in the same class (per Kristin Harter)
Trimethobenzamide (Tigan)	200 mg IM/PR q 6-8 hr
Antihistamine + B6	
Doxylamine + pyridoxine (this is what Diclegis is, but Diclegis is not consistently covered by our patients' insurance, and even if it's covered most pharmacies don't stock it, so it's simpler to order the two components.)	Order Doxylamine 25 mg (or Benadryl 25 mg can substitute for this, same class) and Pyridoxine 25 mg tabs. Have patients take 1 tab of each at night. If nausea continues after 3 days of treatment, add ½ pill of each in the morning and ½ pill of each after lunch.
H2 Blocker	
Pepcid AC	10-20 mg QD-BID, up to 40 mg daily
Phenothiazines	
Promethazine (Phenergan)	12.5-25 mg PO/IV/PR q 4-6 hr
Prochlorperazine (Compazine)	5 to 10 mg PO/IV q 6-8 hr or 25 mg pr q 6-8 hr (or less/prn for break through vomiting with other meds)
Prokinetic agents	
Metoclopramide (Reglan)	10 mg IV (dilute in 50cc IVF) or 10 mg PO Q 8 hours
Serotonin (5-HT3) antagonists	
Ondansetron (Zofran)**	4-8 mg PO/IV q6-8h (see below) 4mg P.O. Q 6-8H TID
Vitamin therapy	
Pyridoxine (Vitamin B6)	25 mg TID. If not effective, consider combining with Doxylamine

Notes about pharmacotherapy:

- ACOG suggests that the first line of therapy be dietary modification and vitamin B6 with doxylamine. If this is ineffective, try Phenergan, Compazine. Reglan is the antiemetic of choice in pregnancy in several European countries.
- Unisom is available OTC, buy tablets not gelcaps, cut 25 mg tablets in half, cost is approximately \$5.00 for 16 doses; nonformulary at SFGH
- **Zofran is now generic, and is covered by MediCal. In triage 4 mg, diluted in 50 cc IVF, given over 5 min (you can also give 8mg IV over 15 min) or 4 mg PO q 6-8h prn. Should be used with caution in patients with underlying cardiac condition, specifically congenital long QT syndrome, and patients who may have low levels of potassium and magnesium (potentially someone with electrolyte abnormalities related to severe n/v).

Education

1. Disc dietary changes to alleviate nausea and vomiting (decrease fats, small frequent meals, eat small amount of complex carbohydrate before rising in am, bland foods, take fluids between meals instead of with meals, drink milk or eat apples or potatoes to neutralize stomach acids, high protein snacks)
2. Avoid triggers (stuffy rooms, bus, strong odors)
3. Avoid brushing teeth within 1-2 hours after eating
4. Reassurance that mild symptoms will not have a negative effect on fetal growth and development

Follow up

1. Nutritionist
2. Send to labor and delivery for rehydration and medication prn
3. Consider social work or psych referral if psych component suspected
4. More frequent prenatal visits until resolved

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Revised 05/2009

Varicose Veins

A. Definition

Swelling of veins due to progesterone induced relaxation of the smooth muscle and mechanical pressure to due growing heaviness of gravid uterus.

B. Management

Diagnostic

Assess for signs of thrombophlebitis

Therapeutic

1. Support hose can be ordered through General Medical Supply or Bell my Pharmacy. A note should be written to justify coverage of hose. Place hose prior to rising in the am.
2. Vit E 600 IU is a dose considered safe in pregnancy and may contribute to vessel wall integrity and the prevention of thrombus formation.
3. Herbal supplements that show promise for decreasing symptoms (swelling pain, sense of heaviness and fatigue in legs, fluid leakage from veins) of venous sufficiency, which is closely related to varicose veins, and are not contraindicated during pregnancy include: butcher's broom, citrus bioflavonoids, gota kola and oxerutins.
 - a. Oxerutins (rutocide) were studied in a double-blind trial of 69 pregnant women and was more effective at reducing symptoms than placebo. Twenty double-blind placebo-controlled trials, enrolling a total of more than 2000 participants have been conducted and virtually all found oxerutins more effective than placebo and with no significant side effects. Typical dose is 900-1200 mg/day in divided doses (i.e. 300 mg TID or 500 mg BID)
 - b. Butcher's broom has been approved by the German Commission E as therapy for chronic venous insufficiency and hemorrhoids. Several small trials support it's effectiveness. Typical dose is a standardized extract containing 7-11 mg ruscogenin daily.
 - c. Citrus bioflavonoids include hesperidin, rutin, diosmin, quercetin and others. A typical dose is 500mg twice daily.
 - d. Gota Kola (Centella asiatica) : several trials indicate its effectiveness. Dose is 20 to 60 mg TID of an extract standardized to contain 40% asiaticoside.

(More information on the research may be obtained in the Health Encyclopedia at iherb.com).

Education

1. Encourage foods rich in Vit A,C,E, and B which are good for vessel wall maintenance
2. Discourage use of constrictive clothing
3. Avoid standing for long periods of time (more than 1 hour)
4. Elevate legs for at least 30 minutes at a time
5. Avoid leg crossing
6. Alert client to possible complications of varicose veins (thrombophlebitis and orthostatic hypotension) and discuss ways to detect and prevent them

Follow up

1. Consult MD for person with hx of thrombophlebitis for evaluation for preventative anticoagulation therapy.

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Revision 05/2009

Dating Pregnancy

A. Definition

Pregnancy is dated using the clinician's best judgment. Factors to consider when dating include: LMP, ultrasound, menstrual history, quickening, FHT's with a doppler &/or fetoscope, uterine size at initial exam, FH, u signs or symptoms of pregnancy, date of conception.

Sure normal LMP and first trimester ultrasound are the most reliable methods. Given the reliability of first trimester ultrasounds, LMP should only be used for women with this exam if the LMP is very high quality.

B. Naegels rule

If dating by sure and normal LMP use Naegels rule:

Calculation of EDD using Naegels rule

28-day cycle: $EDD = LMP + 7D - 3 \text{ mo.}$

30-day cycle: $EDD = LMP + 9D - 3 \text{ mo.}$

26-day cycle: $EDD = LMP + 5D - 3 \text{ mo.}$

C. Clinical Implications in Pregnancy

Among the reasons that accurate dating is important are:

1. Avoiding post-dates
2. Avoiding premature births
3. Detecting IUGR, detecting multiple gestation
4. Detecting polyhydramnios, oligohydramnios, molar pregnancy,
5. Size/Dates discrepancies

D. Ultrasound Dating:

1. Ultrasound dating varies in accuracy depending on gestational age, with decreasing accuracy as gestational age advances, particularly beyond 20-22 weeks. In addition, other factors may influence the accuracy of the test including operator experience (human error), the machinery, maternal body habitus, and fetal positioning. Included in this inconsistency is the accuracy reported in the literature. At ZSFG, we use the table below if there is a discrepancy from a SNLMP. Ultrasounds done between 22-28 weeks +/- 10-14D you can use the rule of eights (below) or the table below – using this still?.
2. If you do not have a SNLMP with regular cycles, do not use it regardless of its proximity to the US EDD. Use the US EDD in these cases.
3. An ultrasound done between 6-126 weeks using CRL is more accurate than a SNLMP. Therefore if a SNLMP EDD is off by >6 days from a 6-126 week CRL ultrasound use the ultrasound EDD. You may use a SNLMP if less than 7 days of ultrasound findings. Rebekah I don't understand this #3 – first it says that 6-12 wk u/s is more accurate than a SNLMP, but then it says use LMP if <7 days different - ? Please advise re: this. I know I've been using SNLMP (the "L=8" method) if the u/s is <7 d different.
4. Dating u/s can be obtained in the WHC by a clinician with these skills, at ANTC (if <14 wks), or in the radiology department (submit an e-referral).
5. NOTE: if there is a discrepancy between a dating u/s and the EDD established via the NT, use your best judgement to establish which is most valid for dating purposes. Radiology and the CA Genetic Screening office will use the NT dates for calculations of genetics results, but this does not commit us to using this for dating the pregnancy.
6. TABLE: ultrasound accuracy

Gestational Age Range*	Method of Measurement	Discrepancy Between Ultrasound Dating and LMP Dating That Supports Redating
$\leq 13\ 6/7$ wk • $\leq 8\ 6/7$ wk • $9\ 0/7$ wk to $13\ 6/7$ wk	CRL	More than 5 d 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
$^{\dagger}28\ 0/7$ 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.		

Notes: 1) An early CRL is more reliable for dating than dates by a later NT; 2) u/s dates obtained Between $14\ 0/7$ and $14\ 2/7$ weeks should not be used unless >10 days different from LMP.

E. Size/Dates Discrepancies:

1. Definition

There is a size/dates discrepancy if the uterine size has a >2 week difference from the established EDD.

2. Differential Diagnosis of Size > Dates

- First and second trimester: inaccurate dating, fibroids, multiple gestation, gross fetal anomalies, full bladder/bowel, obesity, malpresentation, polyhydramnios (rare)
- Third trimester: all of the above and large baby, polyhydramnios

3. Differential Diagnosis Size < Dates

- Inaccurate dating, normal constitutionally small fetus, IUGR, oligohydramnios
- Maternal causes: hypertension, ETOH, drugs, nicotine, infection, chronic disease, nutritional deficit, anemia, class D or F diabetes
- Fetal causes: anomalies, missed AB, fetal infection e.g. TOXO, CMV, herpes, Rubella
- Placental causes: abnormal cord insertion, partial abruption, infarct

F. Management/Treatment:

Diagnostic

- If you do not have good dating or if there is a size dates discrepancy and a dating u/s has not been done, an ultrasound should be obtained or ordered at the WU visit.

2. It may be the clinician's judgment that the discrepancy is a normal variant and does not need an ultrasound for dating at the WU visit (e.g. known fibroids, obesity etc). This should be noted.
3. An ultrasound will be ordered as close as possible to 18-20 weeks for anatomic survey. If the US EDD shows a difference of 10 days or greater compared to the LMP EDD, use the ultrasound date.
4. Always document dating criteria, justification and discrepancies.

Therapeutic

See related protocol for follow-up on problems identified by ultrasound (e.g. IUGR, malpresentation etc.)

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Revised 06/2015, 1/2018

Dental Referrals

A. Dental health in pregnancy

Periodontal disease has been associated with low birth weight and preterm birth

B. Coverage

Emergency MediCal for pregnancy covers teeth cleaning and some very basic dental care

C. Dental referrals

Each patient should have a dental referral made during her initial prenatal visit. Complete the referral form and have it faxed to one of the listed dental clinics. The dental clinic will then call the patient with an appointment. Encourage women to see a dentist and educate them re good dental habits in pregnancy including regular brushing and flossing

D. Follow-up

Follow-up with patients on subsequent visits to be sure they saw a dentist

Revised 2003, 12/2005, 08/2009

Dermatologic Disorders of Pregnancy

The following guideline will include the management of the 3 most common dermatologic conditions that are pregnancy related. Pruritis can be an isolated symptom or can occur in the presence of skin lesions. Not included in this guideline is pemphoid gestationis (or herpes gestationis which complicates 1/40,000-60,000 pregnancies). If you suspect pemphoid gestationis this patient needs to be referred to high risk MD clinic for diagnosis and care.

Prurigo Gestationis or Papular and Pruritic Dermatoses of Pregnancy (also known as Pregnancy Rash).

A. Definition/ Characteristics

Small excoriated pruritic papules on extensor surfaces of extremities and occasionally on abdomen, trunk and shoulders. Usually begins in late 2 or 3 trimester (after 20 wks-most commonly 25-30 weeks). Regresses postpartum.

B. Incidence

Occurs in .5-2% of pregnancies.

C. Clinical Implications in Pregnancy

No maternal/fetal complications. Does not usually reoccur in subsequent pregnancies.

D. Differential Diagnosis

1. Allergic reaction,
2. Contact dermatitis
3. Measles, mumps, rubella, chicken pox
4. Dry skin, scabies,
5. Polymorphic eruption of pregnancy (PUPPPS),
6. Cholestasis (pruritis with no rash),
7. Pruritic folliculitis of pregnancy.

E. Signs and symptoms

1. Itching
2. Papular rash
3. Begins on forearms and moves to extremities. Occasionally found on abdomen, trunk and shoulders

F. Objective Findings

PE: Erythematous 1/2mm. Excoriated papular lesions on extremities especially forearms) maybe on abdomen, trunk and shoulders; symmetrical distribution.

G. Diagnostic Criteria

Physical exam

H. Management

TX

1. Calamine lotion
2. Oatmeal (aveno) baths
3. Wear loose fitting clothing.
4. Antihistamines (Benadryl 25-50 mg TID-QID or QHS)
5. Topical corticosteroids (hydrocortisone 1% crème topically BID).
6. Consult: if needed to r/o other dermatologic conditions.

ED

1. Will resolve after pregnancy
2. Reoccurrence in subsequent pregnancies uncommon.
3. No maternal or fetal complications.
4. Good skin care
 - a. Avoidance of scratching, and therefore secondary skin irritation and perpetuation of the itch-scratch cycle
 - b. Avoidance of contact irritants such as wool clothing, cleansing agents, and pet dander may be helpful.
 - c. Can be worsened by dry skin and may improve with treatment for dry skin, including use of a humidifier, maintaining a cool environment, avoiding hot baths/showers, and using only mild soaps.
 - d. Frequent lubrication should always be recommended

Pruritic Folliculitis of Pregnancy

A. Definition/Characteristics

Small erythematous acniform papules and pustules distributed widely over the upper trunk and back. It is often pruritic, but not always. It may be a form of hormonally induced acne. Onset: 16-40 wks (usually 3rd trimester). Recurrence unlikely. Symptoms disappear 2-3 wks postpartum.

B. Clinical Implications in Pregnancy

No maternal/fetal complications.

C. Differential Diagnosis

Allergic reaction, contact dermatitis, measles, mumps, rubella, chicken pox, polymorphic eruption of pregnancy (PUPPPS), cholestasis (pruritis with no rash), prurigo.

D. Incidence

Occurs in approximately 1 per 3,000 pregnancies

E. Signs and Symptoms:

1. Hx in previous pregnancy (may reoccur).
2. Pt presents with itching and papular acne like rash on upper trunk and back (may include face).

F. Objective Findings:

Erythematous red follicular papules and pustules on back, shoulders, arms, chest and possibly abdomen. Acne-like.

G. Diagnostic Criteria

Clinical

H. Management

TX

1. Calamine lotion, oatmeal (aveno) baths wear loose fitting clothing.
2. 5%-10% benzoyl peroxide topically BID
3. Topical corticosteroids prn (1% hydrocortisone crème or oint topically BID).
4. Consult – if needed to r/o other derm conditions

ED

1. Will resolve after pregnancy, reoccurrence in subsequent pregnancies uncommon.
2. Good skin care

3. No maternal or fetal complications.

Pruritic Urticarial Papules & Plaques of Pregnancy Syndrome (PUPPPS)/ Polymorphic Eruption of Pregnancy (PEP)

A. Definition/Characteristics

Pruritic syndrome of unknown etiology begins late in the second or more commonly in the third trimester. Characteristics: discrete erythematous papules, plaques and hive like patches over the abdomen and thighs and occasionally buttocks, legs, and arms. Primarily seen in primagravidas. Reoccurrence rare.

B. Clinical Implications in Pregnancy

No adverse fetal, maternal or neonatal effects.

C. Incidence

1:200 - 1:240 pregnancies

D. Differential Diagnosis

Allergic reaction, contact dermatitis, measles, mumps, rubella, chicken pox, scabies, prurigo gestationis, pemphigoid gestationis.

E. Signs and Symptoms

1. Pt presents with itching especially on abdomen (in striae) and thighs.
2. Development of hive like vesicular lesions (rash).

F. Objective Findings:

1. Discrete erythematous papules, plaques and hive like patches over the abdomen and thighs and occasionally buttocks, legs and arms
2. Pruritic eruptions are rarely seen above the mid thorax and are never present on the face.
3. Onset often in the striae.

G. Diagnostic Criteria

Clinical

H. Management

TX

1. Calamine
2. Oatmeal (aveno) baths.
3. Benedryl or topical steroids (see above)
4. Consult: for use of systemic corticosteroids or to rule out other conditions

ED

1. Reassurance, seldom reoccurs, no adverse outcomes for mom or fetus,
2. Resolves within two weeks postpartum
3. Good skin care
4. Avoidance of scratching, and therefore secondary skin irritation and perpetuation of the itch-scratch cycle
5. Avoidance of contact irritants such as wool clothing, cleansing agents, and pet dander may be helpful.
 - a. Can be worsened by dry skin and may improve with treatment for dry skin, including use of a humidifier, maintaining a cool environment, avoiding hot baths/showers, and using only mild soaps.
 - b. Frequent lubrication should always be recommended

References

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These clinical practice resources are informational in nature and are not a substitute for the clinical judgment of the health care provider. They are designed for clinical practice at Zuckerberg San Francisco General and may not be appropriate for use in other practice settings. They are based on information available at the time and may not be updated with the most current information at subsequent times. They are not all-inclusive and there may be additional safe and reasonable practices that are not included. They may not be duplicated or circulated without permission.

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Non-Pregnancy-Related Dermatologic Conditions

Fungal (Tinea)

A. Types

1. Tinea capitis – head; scaling red plaques with hair loss
2. Corporis (ring worm) – itchy inflamed plaques; well circumscribed
3. Cruris – genital region; marginated, itching, erythematous scaling lesions. Inflamed borders.
4. Pedis (athletes foot) – itching vesicles, scaling; fissures between toes
5. Manis hands – same as pedis
6. Unguim or onychomycosis – nails; yellow, opaque crumbly nails, separate from nail plate
7. Versicolor – hyper or hypo pigmentation usually torso

B. Management

(Treatment determined by site usually 2-4 wks)

1. Rx: clotrimazole, miconazole. Lotrisone 1%.
2. Versicolor – selenium sulfide 2.5% lotion (postpartum); Retin-A (postpartum)
3. Unguim – P.O. griseofulvin or lamisil (postpartum...only 50% effective and high re-occurrence rate), remove nail. Topical tea tree oil, vicks vapor rub
4. Keep area clean and dry. Change clothing and socks regularly. Cotton.

Scabies (Mites)

Difficult to treat effectively. Lives 3 days away from people.

A. Signs and symptoms

1. Rash distribution in warm moist body folds, between fingers, at the nipples, navel, knees, and groin.
2. Itching other family members have
3. Papules or vesicles in zigzag thread like channels.

B. Management

1. Elomite 5% lotion apply from neck down remain on skin eight hours. Then rinse. Then repeat in one week.
2. Wash everything. May put things in a plastic garbage bag and seal for greater than 3 days (cheaper than washing).
3. Don't sit on furniture for 3 days (cover with sheet)
4. S/SX may continue up to 3 weeks
5. highly contagious, all family members and close contacts probably need to be treated

Eczematous Dermatitis

A. General info

1. Most common skin problem in all age groups.
2. Most often chronic and reoccurring.
3. May follow direct contact with certain substances (poison oak, medications, cosmetics, etc.) can be skin rxn to environmental factors (dry weather, cold).
4. Common in patients with many allergies.

B. Signs and symptoms

5. Good history.
6. C/o dry skin, itching
7. Varied rash: dry or watery, erythema, pustules, scabs, dry skin with fine fissures

C. Management

1. Hydrocortisone 1% cream, ointment,
2. Calamine lotion
3. Keep skin well hydrated.
4. Avoid soap (except pits, pubes, feet).
5. May use more potent Rx's postpartum.
6. Good skin care
 - a. Avoidance of scratching, and therefore secondary skin irritation and perpetuation of the itch-scratch cycle
 - b. Avoidance of contact irritants such as wool clothing, cleansing agents, and pet dander may be helpful.
 - c. Can be worsened by dry skin and may improve with treatment for dry skin, including use of a humidifier, maintaining a cool environment, avoiding hot baths/showers, and using only mild soaps.
 - d. Frequent lubrication should always be recommended

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Domestic Violence / Intimate Partner Abuse

A. Definition

1. Domestic Violence (DV) has been defined as “a pattern of coercive behavior designed to exert power and control over a person in an intimate relationship through the use of intimidating, threatening, harmful, or harassing behavior” in the home setting.
2. Intimate Partner Violence (IPV) is defined by the ACOG as violence by an intimate partner that may involve physical altercation, emotional or physical threats, and/or forced sexual relations. IPV is a pattern of coercive behaviors used by adults and/or adolescents to control their partners.

B. Pregnancy implications

1. Pregnancy is a risk factor for battering. Several studies indicate a range of incidence from 8%-17% of pregnant women in public and private clinics to as much as 24% to 26% (Helton, McFarlane and Anderson, 1987; Cokkinides et al., 1999). Single biggest predictor of abuse during pregnancy is abuse in the year prior to pregnancy. Rates are higher in teens (22% teen vs 16% adult).
2. Within the last year, 7% of American women (3.9 million) who are married or living with someone as a couple were physically abused, and 37% were verbally or emotionally abused by their spouse or partner (The Commonwealth Fund, 1993). 30% of women report abuse in their lifetime.
3. The US Department of Justice estimates that 95% of assaults on spouses or ex-spouses are committed by men against women (Douglas, 1991)
4. 42% of murdered women are killed by their intimate male partner (FBI's Uniform Crime Reports, 1988-91)

C. Signs and symptoms

1. Abuser: Commonly observed behaviors characteristics
 - a. Over-involvement in partner's care
 - b. Jealously
 - c. Controlling behavior
 - d. Quick involvement/short duration of relationship
 - e. Unrealistic expectations (expects perfection from partner)
 - f. Isolates woman from family, friends
 - g. Blames others for their own problems and/or feelings
 - h. Hypersensitivity
 - i. Cruelty to animals and/or children
 - j. “Playful” use of force in sex
 - k. Verbal abuse
 - l. Rigid gender roles
 - m. Sudden mood changes
 - n. Past battering
 - o. Threats of violence
 - p. Breaking or striking objects
 - q. Use of force during an argument
2. Victim: Commonly observed behaviors of women withholding information
 - a. Improbable injury
 - b. Laughing or tittering
 - c. Avoiding eye contact (if culturally appropriate)
 - d. Crying
 - e. Sighing
 - f. Minimizing statements
 - g. Searching/engaging eye contact (fear)

- h. Anxious body language (standing to leave, dropped shoulders, appearing depressed)
- i. Comments about emotional abuse
- j. Comments about a friend who is abused

3. Victim: Historical factors

- a. Broken bones, bruises or other physical injuries
- b. Depression, anxiety, PTSD
- c. Chronic pain or somatic symptoms (headaches, pelvic pain...)
- d. Substance abuse/use
- e. Eating disorders
- f. OB Hx: SAB's, PTL, IUFD, LBW, non-compliant with care
- g. STI's
- h. Delayed prenatal care
- i. Multiple medical/ED visits

D. Plan

Three cornerstones of abuse assessment are ongoing screening, assessing safety, and providing appropriate referrals

1. Screening

A: Ask about domestic violence
 S: Send messages of support
 S: Safety assessment and planning
 I: Inform patients of their options
 S: Supportive documentation
 T: Tell others (health providers)

Key elements to developing trust:

- a. Explaining issues of confidentiality
- b. Asking questions directly, kindly, and without judgment
- c. Asking questions in a way that lets patients know that your inquiries are routine and that you are not singling them out
- d. Asking questions in private away from partners, family, and friends
- e. Listening actively

Key elements for encouraging disclosure:

- a. Ask the question
- b. Ask about abuse in different ways. See Appendix C Sample Questions to Encourage Disclosure.
- c. Allow more time for the visit
- d. Maintain eye contact (when it is culturally appropriate)
- e. Express empathy and concern
- f. Assume that the person can come from varying economic backgrounds. The professions with the highest abuse rates are police, law and medical.

2. Responding to Domestic Violence:

- a. Assess safety of the woman and her children
 (Presence of any of the below increase chance of homicide)
 - i. Presence of guns in the house
 - ii. Use of drugs or alcohol by the abuser
 - iii. Escalating violence
 - iv. Hx of choking attempt by the abuser

- v. Hx of forced sexual behavior
 - vi. Hx of attempts on life of victim by abuser
 - vii. Abuser control of ADLs
 - viii. Suicide attempt by the victim
 - ix. Violence towards children
 - x. Violence outside the home
- b. Recognize and problem solve with client re: barriers to leaving abuser
 - i. Perpetrators behavior (escalating violence, harassment, threats)
 - ii. Lack of safe options
 - iii. Lack of community support for victims
 - iv. Victim overwhelmed by trauma
 - v. Victim ambivalence
 - c. Respect the integrity and authority of each victim of domestic violence over her own life choices
 - d. Licensed medical providers are responsible by law to report DV/IPV to the local police when there is physical evidence of abuse. The provider may at the request of the client tell the police that the client does not want any action to be taken at this time. See attached appendix: Forensic Documentation of Battered Pregnant Women
 - e. Request a Domestic Violence packet in the clinic 5M, 6C MNHC for body maps and phone numbers for reporting of DV/IPV.
 - f. Providing appropriate referrals (See DV folder)
 - i. Domestic Violence shelter/safe house list.
 - ii. Give emergency plan card.
 - iii. Domestic Violence support group (led by Tawnee in 5M meets weekly)
 - g. Involve MSW in plan of care.
 - h. Visits should be more frequent and should include evaluation of current DV status

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Domestic Violence - Forensic Documentation of Battered Pregnant Women

Detailed clinical documentation decreases the likelihood of a clinician having to appear in criminal court.

1. Comprehensive medical documentation, including a thorough history and physical, body maps, and photographic wound documentation
 - The abused woman's statements about the assault need to be accurately reproduced, unedited, and unsanitized. If the woman is quoting the abuser's threats to her, record them verbatim.
 - If the abused is describing the abuser's abuse of sexual areas of her body or is describing abuser's sexual body parts, use her exact words, even if the words are slang or would be offensive in other settings.
 - It is forensically critical to record the patient's affect as she shares her history. Remember the patient may be calm and/or disassociated or panicked.
 - Name the abuser with as much identification as possible, i.e., name and birth date, address. Time and place of occurrence.
 - Identify any possible witnesses to the assault.
2. FORENSIC PHOTOGRAPHY: Whenever possible after receiving signed consent, photographs of injuries should be taken. Digital photography or instamatic cameras and/or a 35-mm camera with a standard 50-mm lens with a dedicated flash and print films of ISO100 or 200 can be used. In the ED they use digital images.
 - The first photo should be taken of the consent-to-be photograph form that usually has been stamped with the patient's name, date of birth, and MR#.
 - Second photo should be a full front view of the patient. The next photo(s) should be the actual injury-(ies) from a distance; subsequent photo(s) should be of the actual injury.
 - Each injury needs to be photographed at least twice, once without the use of a color ruler scale and once with the use of a color scale that has been placed near the injury.
3. EVIDENCE PRESERVATION: Wet and bloodied clothing should be placed into a labeled and sealed paper bag. The paper bag should then be placed in an unsealed plastic bag.
4. WOUND IDENTIFICATION: When describing injuries in the medical record you must use consistent and accurate medical terminology. See attached appendix. Wound Identification Definitions.
 - Document in the medical record a detailed description of the injury, including its size, color, location, and texture (raised vs. flat).
 - Do not "date" the injury by its color.
 - Women may delay treatment or present with histories that do not fit the nature of the injuries. Intentional injuries are more proximal, midline, or "sexual" in nature. These could include patterned choking-related injuries, fingertip-like bruising or punch-like bruising, especially to the upper lateral arms.
5. FOR GUIDANCE: If a forensic exam is needed
 - a. You may call the ED 206-8111 and ask for the charge nurse
 - b. Call the Sexual Assault Forensic Examiner Technical Assistance Helpline: 1-877-819-SART
 - c. On the web: www.SAFETA.org

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Domestic Violence -Wound Identification Definitions

Abrasion: A wound caused by the scraping or rubbing the skin or mucous membrane.

Avulsion: The tearing away of a structure or part.

Bruise/ Contusion: Superficial discoloration due to hemorrhage into the tissue from ruptured blood vessels from beneath the skin surface, without the skin itself being broken.

Cut/Incision: A cut or a wound made by a sharp instrument or object.

Hematoma: A localized collection of extravasated blood usually clotted, in an organ, space, or tissue. Contusions (bruises) and black eyes are familiar forms of hematoma.

Hemoptysis: Coughing and spitting of blood from any part of the respiratory tract. A bloody nose is a very common injury-related cause of hemoptysis, the sputum is bright red and frothy with air bubbles. It should not be confused with the dark red or black color of hematemesis, the vomiting of blood from the stomach/gastrointestinal system.

Hemorrhage: The escape of blood from a ruptured vessel, Hemorrhage can be external, internal, or into the skin or other tissue.

Laceration: The act of tearing. A wound produced by the tearing of body tissue as distinguished from a cut or an incision. External lacerations may be small or large and may be caused in many ways. Some common causes of lacerations are a blow from a blunt instrument, a fall against a rough surface, and an accident with machinery. A laceration may be a ragged tear with many tag ends of skin or a torn flap of skin or flesh.

Patterned injury: An injury where you have reasonable certainty of the object that caused the injury, or by what mechanism an injury was caused.

Pattern of Injuries: Injuries in various stages of healing, which may include a new injury and old scars.

Petechiae: Minute, pinpoint, nonraised perfectly round, purplish-red spots caused by intradermal or submucous hemorrhage, which later turn blue or yellow.

Puncture: An act of piercing or penetrating with a pointed object or instrument. A wound made by piercing or penetrating with a pointed object.

Domestic Violence - Sample Questions to Encourage Disclosure

1. About half of all women will experience some kind of physical abuse in their lives. Has this ever happened to you?
2. Within the last year have you been hit, slapped, kicked or otherwise physically hurt by someone
3. Relationships between adults are sometimes violent. Many women experience some kind of violence at home. I am here to listen and I may have some suggestions for what you can do about it. What happens when you fight at your house?
4. Have you ever been abused, either recently or in the past?
5. I noticed that you have some bruises. How did this happen? Did someone hit you?
6. Do you feel safe in your relationship?
7. Have you ever been in a relationship where you were threatened, hurt or afraid?"
8. Within the last year have you been hit, slapped, kicked or otherwise physically hurt by someone.

Revised 06/2009

Genetic Screening

A. Definition

CA Prenatal Screening Program

This program offers 3 screening modalities, with varying degrees of reliability and predictive value. Highest predictive value is obtained by Full Integrated Screening, which includes first trimester screening, NT screening, and second trimester screening. See below for details related to the process for obtaining this screening in the 5M Women's Health Center.

Other genetic screening options include Non-Invasive Prenatal Testing (NIPT), chorionic villus sampling (CVS), and amniocentesis. These tests are available to women who are at higher risk for genetic abnormalities; genetic counseling is available on Thursday mornings in the 5M WHC (call the UCSF Prenatal Diagnosis Center for appointment), and screening is done at the UCSF PDC.

Cystic Fibrosis screening: highest risk group are non-Hispanic white women and Ashkenazi Jews, family history of CF or partner with CF. Recommend screening for women at risk; for women not at risk, offer as part of package while doing other genetic screening tests (do not offer if not doing other tests). See more detailed information below.

B. Procedure

1. General screening information:

- a. All pregnant women less than 20 weeks gestation must be offered screening.
- b. Intake nurses will complete the genetic screening questionnaire and will refer women as needed for genetic counseling.
- c. Intake nurses will provide patient education booklets about the CA Prenatal Screening Program and obtain consent/declination. If the patient is able to decide what option she prefers, she will sign a consent at the intake visit and consent will be scanned into the EHR. RN will complete all genetic screening requisitions and obtain blood draw that day if appropriate. In the 5M WHC, any genetic screening forms that are not used that day will be placed alphabetically in the box for these forms in the front office.
- d. Patient can drop in on other days for genetic screening, as needed; staff will use these forms to guide blood draws.
- e. For women who want a Nuchal Translucency (NT) ultrasound, the intake RN will request this via e-referral. Sequencing of the first trimester serum test and the NT is as follows: ideally, the serum is drawn at least 5 days prior to the NT; NTs are done at ZSFG Radiology; staff there give the patient results of the combined serum + NT result after the exam.
- f. It is the CNM's responsibility to follow up on the actions taken by the intake RN, and order further testing as indicated (eg. submit NT e-referral, update existing requisitions, create new requisitions – MEAs can help with requisitions).
- g. For women 35 years and older at delivery (33 years in cases of twin gestation), discuss the options of screening versus diagnostic tests (CVS, amniocentesis, NIPT). See AMA guideline.

Table 1: Recommended Genetic Screening Windows

Ultrasound gestational age at initiation of care	1st trimester blood (10w0d-13w6d)	NT US (11w2d-14w2d)	2nd trimester blood (15w0d-20w0d)
<10w2d	10w5d – 11w5d	11w3d – 13w0d	15w0d – 20w0d

10w2d -11w5d	At intake visit	12w0d – 13w0d	15w0d – 20w0d
11w6d – 12w6d	At intake visit	12w4d – 13w4d	15w0d – 20w0d
12wk6d – 14wk2d	At intake visit	ASAP (no later than 14w2d, patient may need same-day appt)	15w0d – 20w0d

2. Workflows:

- In 5M clinic, if women want genetic screening the intake nurse will complete the two screening forms and leave them in the black box in the front office. The two forms (or one) will be attached to a form that indicates windows for blood draws. There is the option of having patients drop in for genetic screening serum blood draw; whether serum is being drawn during a clinic visit or as a drop-in, it is the provider's responsibility to make sure the form is complete and accurate.
- At MNHC, MEA will prep and provide the appropriate form, CNM will review.
- Ultrasound dating by BPD, if available, is best for screening purposes. The use of BPD for dating increases the detection of open spina bifida and Down Syndrome. Prior to 12 weeks gestation, use dating derived from CRL.
- The second tri form should have the reference number for the first tri form in the top left corner. If it's missing it can be found in the scanned first tri document. MEAs can fill out the second tri form if unavailable. For patients who had an NT you do NOT need to fill in the NT information (they have this at the CA screening office).

3. Billing:

- The Prenatal Screening Program will bill Medi-Cal directly if, on the Screening forms, there is a patient birthdate and a Medi-Cal ID number or a Presumptive Eligibility number.
- If a patient receives a bill from the Prenatal Screening Program, she should return the bill with her current Medi-Cal number written on it.

4. Referrals: **patients with a screen positive result** should be referred to (and will be seen at) the UCSF PDC.

NOTE: If no result in the chart, call 1-800-559-5616.

If you need to refer to the PDC do the following:

- If needed (e.g. if you are informed by phone re: a positive genetic screen), contact the patient and review findings and options with her. Do not proceed with what follows until patient has been informed, unless there is no other option – ideally, the patient will hear from a ZSFG provider about the diagnosis before she receives a call from the PDC for an appointment.
- Call the PDC at 415 476-4080, and press "1" to speak with a scheduler. You will need to have certain patient information available, thus proceed as follows:
 - have this info readily available when you make the call by opening the patient's chart in eCW and clicking on the "Info" tab (next to the "Hub" tab)
 - this will give you the info you need: patient name, DOB, mailing address, and MediCal number
- If it is a WHC patient, finish by sending a TE to Esther Ramos letting her know that you made a PDC referral for this patient. She will handle details like sending the PDC prior authorizations and copies of needed labs.

5. Referrals: **patients with a genetic risk factor** (not screen positive): Intake RNs are responsible for referring patients for genetic counseling for genetic risk factors revealed at the intake visit, but it falls on providers to follow up and make these referrals themselves as needed. Genetic counseling for most indications (not abnormal genetic screening) happens with Allyson Scott on Thursday mornings. Appointments can only be made by calling the PDC at 476-4080 Mondays to Fridays. If no one answers, you can leave the referral on voicemail. Make sure to include the following information:
 - a. Name of client with the spelling
 - b. DOB
 - c. LMP
 - d. GA
 - e. MR#
 - f. Reason for referral
 - g. Contact info (client's phone number and address)
 - h. If the client does not speak English, her primary language
6. Management of abnormal analytes. There is some evidence that certain derangements in analytes may put pregnancies at elevated risk of pre-eclampsia, IUGR and/or stillbirth. If these abnormalities are found, the recommendation is for the following:
 - a. Growth u/s at 28-30 weeks
 - b. Weekly ANT starting at 32 weeks

The info below summarizes cut-off values:

First trimester: PAPP-A -- ≤ 0.29 MoM	
Second trimester, single marker (only one marker needed):	
AFP	≥ 2.5 MoM
HcG	≥ 3.0 MoM
Estriol	≤ 0.15 MoM
Inhibin	≥ 3.0 MoM

Second trimester, two or more markers (two or more markers needed):	
AFP	≥ 2.0 MoM
HcG	≥ 2.0 MoM
Estriol	≤ 0.2 MoM
Inhibin	≥ 2.0 MoM

References

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Revised 6/2007, 10/2008, 9/2009, 01/2018

Gestational Diabetes Mellitus

A. Definition

Abnormal carbohydrate metabolism that is diagnosed during pregnancy

B. Clinical implications during pregnancy

Fetal macrosomia, with excessive fat deposition on the shoulders and trunk, and therefore risk for shoulder dystocia; stillbirth, but only with GDM that includes elevated fasting glucose (classA2). There are also maternal implications, as women with GDM are at increased risk for GDM with subsequent pregnancies and for DM

C. Signs and symptoms

May be correlated with glucosuria or S>D

D. Screening

See CHN GDM Guidelines that follow

Note: If initial early screening yielded an elevated GLT, but a normal GTT, do not do a GLT for the third trimester screening. Instead proceed with a GTT

E. Management during pregnancy

Diet controlled diabetics

1. Refer the patient to the Perinatal Diabetes Clinic (PDC). The patient will receive specialized teaching about GDM and blood sugar monitoring from the PDC RN, as well as appointments with the nutritionist. The PDC RN reviews all the GTTs in the clinic. If a patient is diagnosed with GDM, the PDC RN will pass this onto the RN case coordinator for the patient's clinic. The RN case coordinator will make a first available appointment. The goal is that the client has an appointment within 1 week of diagnosis. Appointments are weekly and become less frequent if the client remains in good control. The PDC nurse is responsible for managing the diabetes along with the nutritionist, and the PDC RN will consult with the MD when indicated. The midwife may also review the patient's blood sugar record, and discuss any obstacles and problem solve as appropriate
2. Normal levels: Fasting blood sugar<95, 1-hour post prandial <140
3. No antenatal testing is necessary before 41-weeks gestational age
4. Fetal kick counts starting at 32 weeks
5. No early induction is indicated

F. Borderline diet controlled diabetic/not on insulin

1. Transfer to Midwifery High Risk clinic (Wednesday), so that MD consultation is available
2. The PDC nurse will consult with MD as appropriate
3. The CNM will review the blood sugar record, as well as the PDC RN notes
4. Reinforcement of nutrition and exercise counseling as appropriate
5. Monitor the client's weight, EFW and fetal growth closely
6. Consider ultrasound for EFW
7. Consider sweeping membranes at 37 weeks
8. Consult with MD. Discuss need for antenatal testing and induction of labor
9. Discuss the possible implications of poorly controlled diabetes (insulin therapy, early induction, etc)
10. Fetal kick counts

G. Early Diagnosis of GDM (<20 weeks)

1. These clients may be previously undiagnosed Type 2 diabetics

2. Get HgbA1C ASAP
3. If HgbA1C <6.2, continue with normal GDM care (no High Risk MD consult)
4. If HgbA1C >6.2, send for High Risk MD consult, fetal echocardiogram at UCSF and Level 2 ultrasound.
These clients may need transfer of care to the MD service

H. Insulin dependent diabetics

Transfer to MD High Risk (Wednesday or Thursday) clinic

I. Postpartum Management

See CHN GDM Guidelines that follow

1. All clients diagnosed with GDM need to be tested for overt diabetes 6-8 weeks postpartum and annually thereafter with either 75-g GTT or fasting glucose. These patients should be referred to their primary care provider. If they do not have a primary care provider, they may be referred to the Family Health Center

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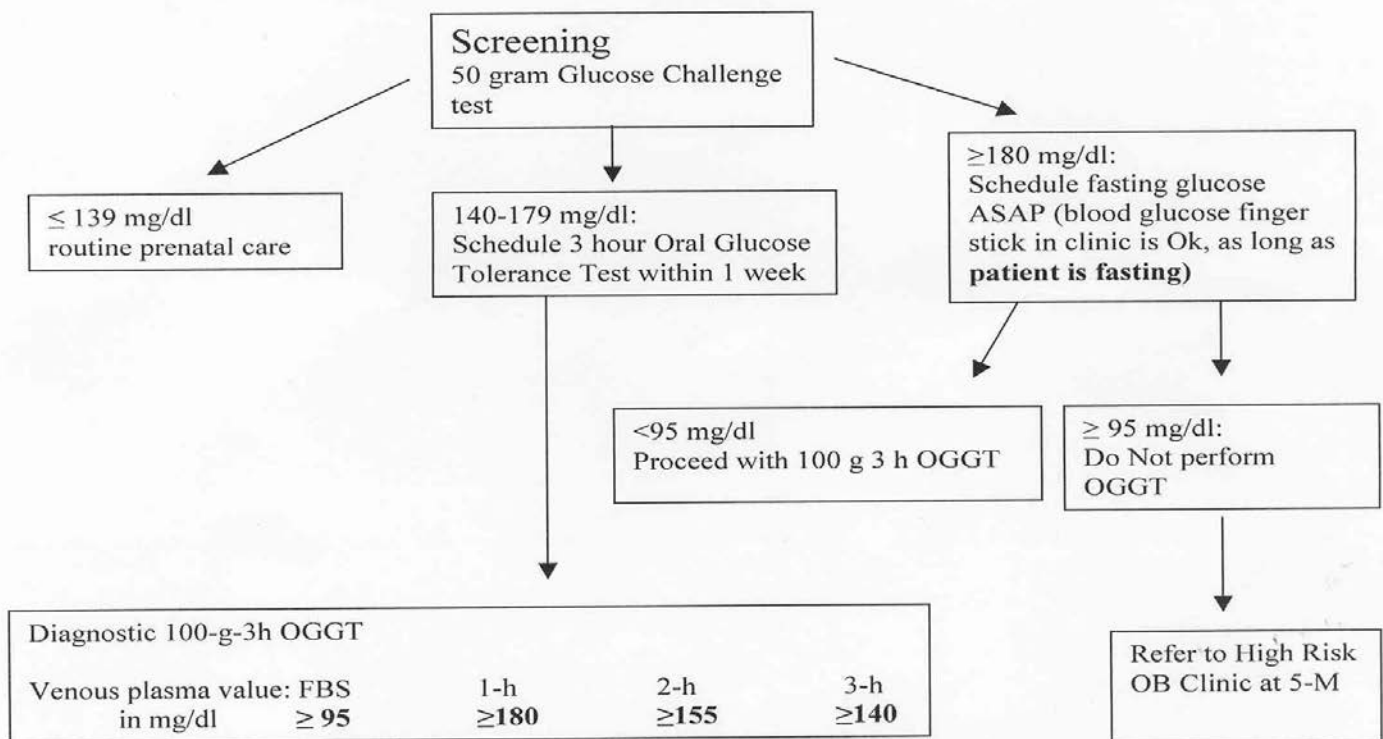
Revised 02/2006, 08/2009

GUIDELINES FOR SCREENING DIABETES IN PREGNANCY SAN FRANCISCO COMMUNITY HEALTH NETWORK

First prenatal visit. Screen and test clients who present with one or more of the following risk factors:

- ❑ Obesity (BMI >30, pre-pregnancy weight)
- ❑ Diabetes Mellitus in 1st degree relative
- ❑ Prior history of
 - Gestational diabetes or glucose intolerance or use of metformin
 - Macrosomia (>4.0 kg or 8lbs 8oz) or large for gestational age infant (90th percentile)
 - Unexplained stillbirth
 - Malformed infant
- ❑ Current glucosuria (100 mg/dl or greater)

24-28 weeks: Screen and test all clients not as yet identified as having gestational diabetes. If initial screening was normal, repeat evaluation.



***If two or more values are elevated:** treat as gestational diabetes

****If one value is elevated:** refer for nutritional counseling. No further testing is necessary. No treatment needed. Re-testing is not necessary if test was done ≥ 24 weeks

Screening Test for gestational Diabetes

50 Gram Oral Glucose Challenge Test (50-g OGCT)

No fasting or dietary restriction required.

Administered during office hours, without respect to time of the day or last meal.

50 grams of glucose, consumed in less than 5 minutes

No smoking

Venous plasma level is drawn one hour from the start of glucose ingestion.

Diagnostic (confirmatory) test for Gestational Diabetes:

100 Gram Oral Glucose Tolerance Test (100-g OGTT)

a. Pre-test instructions:

- ☐ Fast for at least 8 hours and no more than 14 hours (water is OK)
- ☐ Instruct clients to eat “normally” (without dietary restrictions) for at least 3 days before the test.

b. Fasting venous plasma drawn

c. 100 grams of glucose, consumed in less than 5 minutes

d. No smoking

e. Venous plasma level is drawn at 1, 2, and 3 hours from start of ingestion of the glucose load.

Postpartum: all clients diagnosed with Gestational Diabetes need to be tested for overt Diabetes 6-8 weeks postpartum and annually thereafter with either:

a. 75 gram 2 hour Glucose Tolerance Test (75-g GTT) (preferred test)

≥200 mg/dl overt Diabetes*

140-199 mg/dl Impaired Glucose Tolerance

<140 mg/dl normoglycemia

b. fasting glucose (if declines the 75-g GTT)

≥ 126 mg/dl overt Diabetes*

≥110 < 126 mg/dl Impaired Fasting Glucose

<100 mg/dl normoglycemia

Patients that are diagnosed with Diabetes need to be **referred back** to their PCPs!

*In the absence of unequivocal hyperglycemia and acute metabolic decompensation, these criteria should be confirmed by repeat testing on a different day.

Late-to-care patients:

a. < 36 weeks apply same strategy as universal screening at 24-28 weeks.

b. >36 weeks or impending labor regardless of gestational age: obtain fasting glucose (best) > 105 mg/dl manage as if GDM, or random glucose (2nd best) >200 mg/dl manage as if GDM.

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2. Brody SC, Harris R, Lohr K. Screening for gestational diabetes: a summary of the evidence for the U.S. Preventive Services Task Force. Obstet Gynecol. 2003 Feb;101(2):380-92. Review.

3. Kjos S. L., Buchanan T. A. Current Concepts: Gestational Diabetes Mellitus N Engl J Med 1999; 341:1749-1756

BMI (kg/m²)	19	20	21	22	23	24	25	26	27	28	29	30	35	40
Height (in.)	Weight (lb.)													
58	91	96	100	105	110	115	119	124	129	134	138	143	167	191
59	94	99	104	109	114	119	124	128	133	138	143	148	173	198
60	97	102	107	112	118	123	128	133	138	143	148	153	179	204
61	100	106	111	116	122	127	132	137	143	148	153	158	185	211
62	104	109	115	120	126	131	136	142	147	153	158	164	191	218
63	107	113	118	124	130	135	141	146	152	158	163	169	197	225
64	110	116	122	128	134	140	145	151	157	163	169	174	204	232
65	114	120	126	132	138	144	150	156	162	168	174	180	210	240
66	118	124	130	136	142	148	155	161	167	173	179	186	216	247
67	121	127	134	140	146	153	159	166	172	178	185	191	223	255
68	125	131	138	144	151	158	164	171	177	184	190	197	230	262
69	128	135	142	149	155	162	169	176	182	189	196	203	236	270
70	132	139	146	153	160	167	174	181	188	195	202	207	243	278
71	136	143	150	157	165	172	179	186	193	200	208	215	250	286
72	140	147	154	162	169	177	184	191	199	206	213	221	258	294
73	144	151	159	166	174	182	189	197	204	212	219	227	265	302
74	148	155	163	171	179	186	194	202	210	218	225	233	272	311
75	152	160	168	176	184	192	200	208	216	224	232	240	279	319
76	156	164	172	180	189	197	205	213	221	230	238	246	287	328

- A. Patients with increased risk of fetal anomalies or aneuploidy can be evaluated by the UCSF Prenatal Diagnosis department. Prenatal Diagnosis visits may either be held at UCSF, or more typically once a week at SFGH. Prenatal diagnosis and counseling should be offered (and documented) to all clients who have the following:
1. Abnormal first or second trimester serum screening or abnormal fetal nuchal translucency
 2. Suspected or known fetal abnormalities on ultrasound
 3. Advanced maternal age (35 years or greater at EDD, 32 years if carrying twins)
 4. Consanguineous relations
 5. Family history of genetic disorder (hemophilia, cystic fibrosis, NTD, Down's syndrome)
 6. Family history of mental retardation or developmental delay
 7. Family history of recurrent pregnancy loss including spontaneous abortion
 8. History of stillbirth
 9. Hx ETOH use in pregnancy, and/or other substance abuse in pregnancy
 10. Hemoglobinopathies, i.e., esp. MCV<80 or any electrophoresis abnormalities (see Hemoglobinopathy guideline)
 11. Known genetic disorder or illness
 12. Radiation exposure
 13. Suspicious reoccurrence of illness or disability in family
 14. Varicella, Fifth's disease, Rubella, Toxoplasmosis, CMV, Syphilis in current pregnancy
 15. 3 or more spontaneous abortions
 16. Any other disorders noted in Prenatal Genetic screen
- B. Obtaining Prenatal Diagnosis referral:
2. Generally, the RNs obtaining the initial medical history will refer the client to Prenatal Diagnosis if any of the above are obvious at that visit
 3. CNMs should follow-up on Prenatal Diagnosis referrals and/or refer when more subtle presentations occur
 4. Referrals are made to the Prenatal Diagnosis office at 476-4080 Mondays to Fridays. If no one answers, you can leave the referral on voicemail. Make sure to include the following information:
 - a. Name of client with the spelling
 - b. DOB
 - c. LMP
 - d. GA
 - e. MR#
 - f. Reason for referral
 - g. Contact info (client's phone number and address)
 - h. If the client does not speak English, her primary language

Revised 08/2009

GERD

- A. Definition Gastroesophageal reflux disease is the relaxation of the cardiac sphincter, delayed emptying of the stomach, and pressure from the enlarging uterus that forces the acidic contents into the lower esophagus (Broussard and Richter, 1998; Calhoun, 1992).
- B. Clinical implications during pregnancy
 - 1. Poor weight gain
 - 2. Patient discomfort
 - 3. Esophagitis in severe cases
 - 4. Esophageal stricture
- C. Signs and symptoms
 - 1. Burning in upper abdomen
 - 2. Symptoms associated with eating
 - 3. Symptoms worsening as pregnancy progresses
 - 4. Poor weight gain
- D. Diagnostic criteria: clinical diagnosis based on symptoms
- E. Management
 - Diagnostic
 - 1. Close observation of weight and ketones in urine
 - 2. Consider H/H and Guiac stools X3 to rule out GI bleed

Therapeutic

- 1. Avoid eating right before bedtime
- 2. Small frequent meals
- 3. Elevate head of bed with bricks or blocks
- 4. Smoking cessation
- 5. Nutrition referral for dietary consultation

For mod-severe GERD:

- 1. Rx Antacids like Maalox or Mylanta
- 2. Avoid Alka Seltzer since it interferes with absorption of B-complex vitamins
- 3. Sucralfate 1gm po AC and QHS
- 4. Tums can be used, but may cause a rebound gastric secretion

For severe GERD not relieved with the above therapies:

- 1. RX Pepcid 20-40mg po QHS or 20mg BID (Category B)
- 2. RX Protonix 20-40mg po QD (Category B-this is the cheapest of the proton pump inhibitors)
- 3. RX antiemetics eg. Reglan 10mg-15mg po AC and HS/QID
- 4. MD consult if above therapies don't work.

Education

- 1. Diet education re: low fat diet

Follow Up

- 1. Increase freq of visits based on response to treatment

2. Nutritionist referral

Note: It is of questionable benefit to test for H. pylori during pregnancy as pregnant women have a decreased risk of Peptic Ulcer Disease (PUD) and GI advises to wait until 6 week postpartum to treat as the vast majority of symptoms will resolve on their own or with acid reduction therapy. The decrease risk of PUD is theorized to be due to increased placental histamine levels and lower maternal histamine, increased gastric mucin production leading to protection of the gastric mucosa, reduced gastric acid secretion and enhanced immunological tolerance to H. pylori (Gabbe, 2002).

References

1. Gabbe, S.G., Niebyl, J.R., and Simpson, J.L.: Obstetrics Normal and problem pregnancies Philadelphia, Churchill Livingstone, 2002, p. 79).
2. Walsh, L.: Midwifery Community-Based Care During the Childbearing Year, Philadelphia, W.B. Sanders, 2001, p.141.

Revised 08/2009

Gonorrhea

A. Definition

Gonorrhea is a sexually transmitted infection caused by the bacterium *neisseria gonorrhoeae*.

B. Background

1. Incidence has decreased annually since 1987
2. Rate among women is 119.1 per 100,000
3. Non-hispanic Black women aged 15-19 highest risk group
4. Incidence highest in high density urban areas and among persons under 24 years of age
5. In San Francisco, GC has increased significantly in heterosexual populations in the southeast part of the city
6. Usually limited to mucosal surfaces, GC affects the urinary tract, rectum, vagina, cervix, and sometimes the throat and eyes
7. Infection is primarily spread through sexual contact with another person
8. GC can also be transmitted to the eyes to the newborn during birth or if a person has discharge on her fingers and touches the eyes, resulting in conjunctivitis
9. The cervix is the first place of infection in women; if left untreated; the infection can spread to the uterus and fallopian tubes and result in PID
10. GC can be spread from penis to vagina (60-90% infection rate), vagina to penis (20% infection rate) and by oral as well as anal sex (30% of women with cervical GC)
11. Approximately 2% of persons with untreated gonorrhea will develop Disseminated Gonococcal Infection (DGI). 75% of DGI cases are in women; DGI is associated with the onset of menses
12. Most GC transmissions occur with asymptomatic infections. Infection is often asymptomatic in women until complications like PID or infertility develop
13. Past infection does not make a person immune; previous infections may predispose you to more rapid development of complications with subsequent infections
14. Gonorrhea is associated with other STIs, especially chlamydia, and increases both the incidence of and susceptibility to infection with HIV

C. Clinical Implications in Pregnancy

1. Untreated gonorrhea can cause PID scarring, future infertility, and increases the risk of future ectopic pregnancy
2. Gonorrhea can be transmitted to newborns during birth via the vagina Complications in the infant range from eye infections and blindness to pneumonia and sepsis if left untreated
3. Also associated with preterm birth.
4. Rare DGI

D. Signs and Symptoms

1. 50-80% of women are asymptomatic or have mild, nonspecific symptoms such as:
2. Irregular vaginal bleeding
3. Bleeding between periods
4. Mucopurulent vaginal and cervical discharge
5. Lower abdominal pain
6. Vulvar and vaginal irritation
7. Vulvar swelling and redness
8. Dyspareunia
9. Dysuria
10. Joint pain

11. Sore throat
12. Rectal infections may present as constipation, creamy/pus-like discharge, itching, painful blood tinged stools, and rectal bleeding.

E. Diagnostic Criteria

1. DNA test-(in order of sensitivity)
 - a. Cervical or rectal swab (go in 2-3 cm, rotate swab x 10-30 seconds), or oropharyngeal swab (use 2-3 swabs, swab x 10 sec)
 - b. Vaginal swab (you may have patient do this herself)
 - c. First stream dirty catch urine sample (at least 1 hour since last void, first 15-20cc)
 - d. The lab slip used is special for GC and chlamydia, not the usual microbiology requisition
2. Gram stain-best for men (>95% sensitivity), not recommended for women (50-70% sensitivity)
3. The urine sample method is cheap and common but is actually less sensitive for GC than for CT. Increased use of the urine LCR method has made it difficult to track antimicrobial resistance.

A. Management/Treatment

Diagnostic

1. Send RPR, HIV, HbSAg if not recently done

Therapeutic

2. Treat cervical, urethral, and rectal GC with Ceftriaxone 250 mg IM in a single dose AND Azithromycin 1g p.o. (it is now recommended to treat presumptively for CT). Give Azithromycin as described in CT guideline.
3. Because of high rates of high rates of HIV/GC co-infection, offer HIV Pre-Exposure Prophylaxis (PrEP). For counseling and treatment, get patient a one-time appointment with HIVE by sending a secure email with patient info to Dominika Seidman. She will facilitate the HIVE MSW Becca contacting the patient with an appointment. These workflows will be changing but for now please follow this procedure.
4. It is recommended that all of the woman's sexual partners for the preceding 60 days be treated; give the patient information about the City Clinic for their treatment.
5. Dispense condoms.
6. Go to the NP/PA office and find the STI binder to record that you've treated the patient. In the NP/PA office, find and fill out a CMR form. There should be copies of this form in the binder but if for some reason there aren't, you can download forms at <http://dphnet.dph.sf.ca.us/Forms/FormSrc/CommDiseasesRptableyCMR062007.pdf>.
7. Fax CMR to the number indicated on the form.

B. Education

1. Refer all partners (within the last 60 days or the last partner if >60 days) to appropriate clinic for STI testing and treatment:
 - a. Adults: City Clinic, 356 7th St between Folsom and Harrison 864-8100
 - b. Teens: New Generation Health Center
2. Proper hand washing to avoid transmission to eyes
3. Consistent condom use
4. Reducing the # of sex partners

C. Follow-up

1. Test of cure > 1 wk after treatment (required in pregnancy)
2. Re-screen at 36 weeks
3. Call CDC to report case: 404-639-8373.

References

1. CDC (2002) STD Treatment Guidelines 2002. MMWR 511(RR-6):1-80.
2. Grimes, D. (2000) STD Update: Incidence trends and New Screening Tests. The Contraception Report 11(3) 4-8, 10.
3. Miller, K. & Graves, J.C. (2000) Update on the Prevention and Treatment of STIs. American Family Physician 61,379-86.
4. www.acog.org
5. www.health.state.ny.us/nvsdoh/communicable_diseases/en/gonor.html

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Guidelines for the Prevention of Neonatal Group B Streptococci (GBS) Sepsis

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Screening

Urine Cultures:

On all urine cultures sent on pregnant women with high-risk PCN allergies (see section I.C. for definition of high-risk PCN allergy), please write "PCN-Allergic" in the Patient History box to ensure the laboratory will conduct Clindamycin and Erythromycin sensitivity testing if GBS is recovered.

Pregnant women should undergo a recto-vaginal culture for GBS between 35 and 37 weeks gestation EXCEPT:

1. Women with a previous infant with invasive GBS disease (*not* simply maternal GBS colonization/UTI in a past pregnancy)
2. Maternal GBS bacteriuria in current pregnancy, regardless of the colony count recovered. (See Section II. A. Treatment of GBS bacteriuria.)
3. The GBS culture results are valid for an average of 5 weeks, so it is ideal to wait until 36-37 weeks to do the culture unless preterm delivery is suspected. If more than 5 weeks has passed since the GBS culture and the woman has not delivered, the provider should rescreen for GBS (or use the risk-based approach to GBS antibiotic prophylaxis).

All pregnant women should be specifically screened for a penicillin allergy. If a woman reports a penicillin allergy, the specific symptoms experienced should be investigated. Penicillin-allergic women are considered at high-risk of anaphylaxis if they have experienced immediate hypersensitivity to penicillin (e.g. angioedema, urticaria) or have a history of anaphylaxis. Other high-risk women are those with a history of asthma or other conditions that would make anaphylaxis more dangerous or difficult to treat (e.g. women being treated with beta-adrenergic-blocking medication). Women with a history of delayed rash or other minor side effects should be considered low-risk and can be treated with a first-generation cephalosporin if found to have GBS.

Technique:

1. Swab lower vagina/introitus then the rectum (ideally through the anal sphincter) with the same or 2 different swabs *without* the use of a speculum. A cervical culture should not be done and will not be processed by the SFGH Clinical Laboratory.
2. Swab(s) should be transported in a non-nutritive medium such as Amies or Stuart's without charcoal. The routine dual culture swab system with the blue cap in the clear package at SFGH is Amies medium without charcoal. If 2 swabs are used, both should be placed in the same transport tube.
3. Fill out Microbiology requisition slip:
 - a. Mark "GU site" and write in "vaginal/rectal" for source of specimen.
 - b. Mark "Group B strep only" for test requested, not aerobic/anaerobic culture/sensitivity or gram stain.
 - c. If a woman reports a *high-risk* penicillin allergy (e.g. shortness of breath, anaphylaxis, etc... See I.C.), write "PCN-Allergic" in the Patient History box on the specimen requisition slip to ensure the laboratory will conduct Clindamycin and Erythromycin sensitivity testing if GBS is recovered.
4. Transport the culture to the SFGH Clinical Laboratory/Microbiology within 48 hours. Delayed processing or transport may cause a false negative result.
5. Specimens that are unacceptable and will not be processed by laboratory:
 - a. Dry swabs not in specified transport medium.
 - b. Cervical source or source other than vaginal/rectal.
 - c. Specimen received in lab more than 96 hours after collection.

Treatment

Antepartum GBS Bacteriuria

1. Treat $\geq 10,000$ cfu GBS in urine with antibiotics at the time of diagnosis because of risk of preterm delivery with GBS bacteriuria. Antibiotic options include 4-7 days of Amoxicillin, Cephalexin, Trimethoprim-Sulfa, Nitrofurantoin (and Clindamycin or Erythromycin if found to be susceptible). Perform a test of cure following treatment. These women do not need rectovaginal screening at 35-37 wks and should automatically receive intrapartum GBS prophylaxis. (See II.B.ii.)
2. 1000 cfu – 10,000 cfu GBS in urine does not require antibiotics during the antepartum period. These women do not need rectovaginal screening at 35-37 wks and should automatically receive intrapartum GBS prophylaxis. (See II.B.ii.)

Intrapartum GBS prophylaxis is indicated in the following situations:

1. Previous infant with invasive GBS disease (not simply maternal GBS colonization/bacteriuria in past pregnancy)
2. Maternal GBS bacteriuria during current pregnancy, regardless of colony count. (See II.A.i. and II.A.ii.)
3. Positive maternal GBS screening culture in current pregnancy (unless planned cesarean section without evidence of labor or ruptured membranes – see II.C.ii.)
4. Maternal fever and/or chorioamnionitis. These women should receive Cefoxitin 2gm IV q8hr to cover GBS as well as other potential pathogens (eg. GNR, anaerobes).
5. For women with true PCN allergies, these women should receive Clindamycin/Gentamicin or Vancomycin/Gentamicin (if documented Clindamycin-resistant GBS).
6. Unknown GBS status (culture not done or results unavailable) AND the following risk factors:
7. Preterm delivery < 37 weeks
8. Prolonged ruptured membranes ≥ 18 hours
9. Evidence of chorioamnionitis (maternal temperature 38°C or greater). The woman should be treated with broad-spectrum antibiotics (See II.B.iv.) to cover aerobic/anaerobic pathogens in addition to GBS.

Intrapartum GBS prophylaxis is *not* indicated in the following situations:

1. Negative vaginal/rectal GBS culture done within the 5 weeks preceding delivery (i.e. 35-37 weeks gestation), regardless of intrapartum risk factors
2. Planned cesarean section in the absence of labor, ruptured membranes, and chorioamnionitis
3. Maternal GBS colonization/bacteriuria in past pregnancy (if current GBS is negative and no evidence of GBS neonatal sepsis in past pregnancy)

Intrapartum antibiotic regimens:

1. Begin in labor or at time of ruptured membranes. There have been several cases at SFGH in which intrapartum antibiotics were not started in a timely fashion among women admitted in early labor, so consider starting
2. Antibiotics before the onset of active labor for women admitted for induction or early labor.
3. Recommended: Penicillin G, 2 million units IV every 4 hours until delivery (if available). Of note, this dosing differs from current CDC recommendations but is consistent with pharmacokinetic studies conducted among pregnant women. The CDC recommended dosing is 5 million units IV load, then 2.5 million units IV q4 hours.
4. Alternative: Ampicillin, 1 gm IV every 4 hours until delivery. Of note, this dosing differs from current CDC recommendations but is consistent with pharmacokinetic studies conducted among pregnant women. The CDC recommends 2gm IV loading dose, then 1 gm IV every 4 hours
5. If penicillin-allergic and not at high risk for anaphylaxis (e.g. history of rash or other mild reaction to penicillin. See I.B.):
6. Cefazolin, 1 gm IV every 8 hours until delivery Of note, this dosing differs from current CDC recommendations but is consistent with pharmacokinetic studies conducted among pregnant women. The CDC recommends 2gm IV loading dose, then 1 gm IV every 8 hours.
7. If penicillin-allergic and at high risk for anaphylaxis (see I.B.), Clindamycin and Erythromycin susceptibility testing should be done on GBS isolate by microbiology laboratory. Treat these women with:
8. Clindamycin, 900 mg IV every 8 hours until delivery if susceptible, or
9. Erythromycin, 500mg IV every 6 hours until delivery if susceptible, or
10. Vancomycin, 1 gm IV every 12 hours until delivery if GBS resistant to Clindamycin and Erythromycin (or susceptibility unknown) AND high risk for anaphylaxis.

Pediatric Follow-up

Maternal GBS negative:

1. If evidence of maternal chorioamnionitis:
 - a. Order neonatal CBC and blood culture.
 - b. Treat neonate with antibiotics if abnormal neonatal CBC, positive blood culture or symptomatic.
2. If prolonged rupture of membranes (≥ 18 hours) without evidence of maternal chorioamnionitis:
 - a. Consider neonatal CBC and/or blood culture, as per pediatrician/neonatologist discretion.
3. Preterm delivery (≤ 35 weeks):
 - a. Order neonatal CBC and blood culture.
 - b. Treat neonate with antibiotics if CBC abnormal, blood culture positive, or symptomatic. Consider neonatal antibiotics if rupture of membranes exceeds 18 hours.

Maternal GBS positive:

1. If woman received at least 4 hours of prophylactic antibiotics:
 - a. Observe neonate closely for evidence of infection.
 - b. Order neonatal CBC or blood culture only if symptomatic.
2. If woman received less than 4 hours of prophylactic antibiotics:
 - a. Order neonatal CBC and blood culture.
 - b. Treat neonate with antibiotics only if neonatal CBC is abnormal, blood culture is positive, or symptomatic.
3. If prolonged rupture of membranes (≥ 18 hours)
 - a. Order neonatal CBC and blood culture.
 - b. Consider neonatal antibiotics x 48 hours, until blood culture documented as negative.
 - c. Treat neonate if abnormal CBC, positive blood culture or symptomatic.
4. Preterm delivery (< 37 weeks):
 - a. Order neonatal CBC and blood culture.
 - b. Treat neonate with antibiotics x 48 hours, until blood culture documented as negative.

Maternal GBS	Clinical scenario	Antepart abx	Intrapart abx	Neonatal cbc/blood cx	Neonatal abx
Regardless	Prior infant with invasive GBS disease	No	Yes π	No	No
	Maternal fever/chorioamnionitis	Yes *	Yes *	Yes	Yes
Unknown	Preterm delivery < 37 wks	Yes π	Yes π	Yes	Yes δ especially if very preterm
	Prolonged rupture of membranes (≥ 18 hrs)	Yes π	Yes π	Yes	Yes δ
	Prior infant with invasive GBS disease	No	Yes π	No	No
	Maternal fever/chorioamnionitis	Yes *	Yes *	Yes	Yes
Positive	Antepartum bacteriuria (>10,000 cfu GBS)	Yes ϵ	Yes π	No	No
	Antepartum bacteriuria (1000-10,000 cfu GBS)	No	Yes π	No	No
	Preterm delivery < 37 wks	Yes π	Yes π	Yes	Yes x 48h until blood cx neg
	Term labor with or without prolonged ROM	No	Yes π Begin in labor or at ROM	Yes if <4hr abx, symptomatic or ROM ≥ 18 h	Yes δ ; Consider abx until cx neg if ROM ≥ 18 h
	Cesarean section without labor or ROM	No	No	No	No
Negative	Term labor with or without prolonged ROM	No	No	No	No
	Maternal fever/chorioamnionitis	Yes	Yes *	Yes	Yes, δ
	Preterm delivery < 37 wks	No λ	No	Yes if <35w	Yes δ
	Preterm premature rupture of membranes	Yes $\ddagger$	Yes $\ddagger$ Do not need to retreat if pt already received full course for latency.	Yes	Consider if ROM ≥ 18 h

π Women should receive PCN 2 million units IV q4 hours (if available) or ampicillin 1 gm IV q 4hr until delivery. CDC recommends PCN 5 million units IV load, then 2.5 million units q4 hours or Ampicillin 2 gm IV load then 1 gm IV q4 hours. Women who have a mild PCN allergy should be treated with Cefazolin 1 gm IV q8 hours. The CDC recommends 2gm IV load, then 1 gm IV q8 hours. Women with a history of a severe PCN allergy should be treated until delivery with Clindamycin or Erythromycin as guided by laboratory sensitivities. (Clindamycin 900 mg IV every 8 hours or Erythromycin 500mg IV every 6 hours). Women with a history of a severe PCN allergy and documented Clindamycin and Erythromycin-resistant GBS should be treated with Vancomycin, 1 gm IV every 12 hours until delivery.

* Antibiotics should be broad spectrum and cover GBS as well as other potential aerobic/anaerobic pathogens. 1) Cefoxitin 2gm IV q8hr, or 2) Gentamicin and Clindamycin if true PCN allergy, or 3) Gentamicin and Vancomycin if true PCN allergy and Clindamycin-resistant GBS.

£ Women with GBS bacteriuria (>10,000 cfu) should be treated upon diagnosis with Amoxicillin 500mg tid x 10 days. Women with high-risk PCN allergies should be treated with Clindamycin or Erythromycin, depending on urine culture sensitivities. These women should have a follow-up test of cure of their urine.

λ In women with preterm labor, a GBS culture should be sent, and she should receive prophylactic antibiotics while awaiting GBS culture results if delivery possible within 48 hours.

‡ Ampicillin with or without Erythromycin should be given to all women with PPROM even if GBS-negative to prolong latency not to prevent GBS disease, per se. The same regimen should be given to women with PPROM who are GBS-positive.

δ Treat neonate with antibiotics if abnormal CBC, positive blood culture or symptomatic.

Antibiotic	Pharmacokinetic-based dosing	CDC recommendations (based on consensus)
Penicillin	2 gm IV every 4 hours	5 million units IV load, then 2.5 million units IV every 4 hours
Ampicillin	1 gm IV every 4 hours	2 gm IV load, then 1 gm IV every 4 hours
Cefazolin	1 gm IV every 8 hours	2 gm IV load, then 1 gm IV every 8 hours
Clindamycin	900 mg IV every 8 hours	same
Erythromycin	500 mg IV every 6 hours	same
Vancomycin	1 gm IV every 12 hours	same

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Hematuria

A. Definition

Hematuria is defined as $\geq +1$ blood on a urine dip. The American Urological Association defines microscopic hematuria as 3 or more RBC's/HPF. (Most publication definition is 5-10 RBC's/HPF).

The etiology of hematuria in pregnancy may be intrinsic renal, urinary tract infection, vaginal etiology or relating to systemic disease. Because pregnancy is associated with significant anatomic changes in the kidney and its collecting system idiopathic hematuria of pregnancy is not uncommon and present in approximately 3% of pregnancies.

B. Clinical Implications in Pregnancy

It is important with hematuria during pregnancy to r/o causative factors which could contribute to perinatal morbidity. Idiopathic hematuria during pregnancy may be associated with an increased risk of pre-eclampsia (Stehman-Breen et al) but in the absence of causative factors does not increase maternal or fetal risk in other ways. Published studies on microscopic hematuria in pregnancy suggest minimal testing during pregnancy because of the low probability of serious disease.

C. Signs and Symptoms

≥ 250 (+1) blood on a urine dip without signs or symptoms of underlying disease (e.g. UTI, pyelo, vaginal bleeding).

D. Differential diagnosis

1. urinary tract infection including pyelonephritis
2. vaginal bleeding (see bleeding during pregnancy)
3. urolithiasis (colicky abd pain, recurrent UTI's and hematuria)
4. renal disease
5. acute glomerulonephritis
6. trauma
7. tumor (rare in pts <50 yrs old)
8. tuberculosis
9. False positives can occur due to certain foods (eg beets) and medical conditions.

E. Risk factors for significant disease in patient with microscopic hematuria

1. Age >40
2. Smoker
3. Hx gross hematuria
4. Occupational exposure to chemicals or dyes
5. Previous urologic disease (e.g. chronic cystitis)
6. Hx irritative voiding symptoms
7. Analgesic abuse
8. Hx of pelvic irradiation
9. Cyclophosphamide exposure

F. Objective Findings:

1. VS: Temp, BP (r/o pre-eclampsia or underlying HTN)
2. PE: CVAT, suprapubic tenderness
3. Pelvic prn
4. LAB: $\geq +1$ blood on a urine dip

5. Urine dip for protein, nitrites, leukocytes
6. Wet mount: prn

G. Diagnostic Criteria

≥ 250 (1+) blood on a cath or consistently spilling 50 (tr) of blood on urine dip without evidence of UTI, vaginal origin or other etiology; confirmed with a formal urine micro which shows > 3 RBCs/hpf.

H. Management/Treatment

Diagnostic

1. Urine C&S to r/o UTI
2. Urine-analysis with Micro to r/o stones, confirm blood, r/o glomerulonephritis (casts)
3. Wet mount, CT/GC prn if suspect vaginitis or cervicitis
4. Serum creatinine
5. Renal ultrasound if suspect urolithiasis or with risk factors for significant disease (not considered part of initial WU).

Treatment

1. None

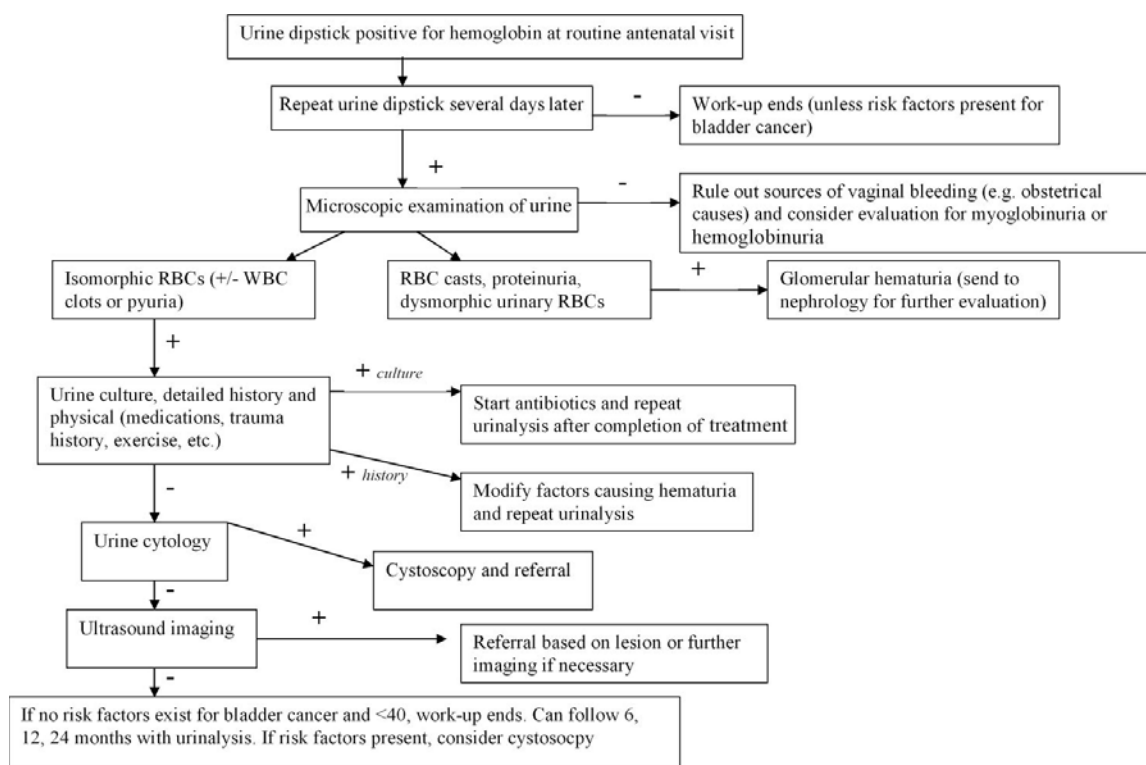
Education:

1. Review signs and symptoms of pre-eclampsia.
2. Hematuria will probably resolve after pregnancy

Follow-up:

1. Consult with the MDs for persistent hematuria (more than 2 urine dips with 1+ heme) after initial WU. Continue to monitor during pregnancy for underlying causes and pre-eclampsia.
2. If + RBC casts she has glomerular disease and needs prompt referral to renal clinic
3. If hematuria persists at the 6 week postpartum visit, send patient for a urology consult to r/o underlying renal disease. Before urology consult pt should have a recent UA with micro, a renal ultrasound and a serum creatinine.

Evaluation of asymptomatic microscopic hematuria in pregnancy



Sandhu, K S, LaCombe, J A, Fleischmann, N, et al. (2009).
Note can use ultrasound imaging instead of cytology to evaluate for tumor.

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Hemoglobinopathies, (see also Appendix I)

General Information

A. Normal Hemoglobin

1. Consists of 4 interlocking polypeptide chains that are each attached to a heme molecule
2. There are different types of chains: alpha, beta, gamma, and delta

Adult hemoglobin type	Normal value
Hgb A (2 alpha +2 beta chains)	95-98%
Hgb A2 (2 alpha and 2 delta chains)	<3.5%
Hgb F (2 alpha and 2 gamma chains) Fetal hemoglobin	<2%

B. Overview of hemoglobinopathies

1. Thalassemias → disorders of decreased globin chain production, resulting in microcytic anemia. They are classified according to the globin chain affected. The 2 most common types are alpha-thalassemia and beta-thalassemia
2. Hemoglobin variants → this refers to structural abnormalities of globin, such as Hemoglobin S and C
3. Thalassemias occur in higher frequency in the Mediterranean area, the Middle East, Southeast Asia, Africa, and the Indian subcontinent. However, increasingly diverse ethnic and geographic distribution of hemoglobinopathy genotypes has made risk assessment base on ethnic origin alone less reliable

Alpha-Thalassemia

C. Alpha-Thalassemia carrier

1. 1 gene deletion
2. Results in NO abnormalities; known as “silent carrier”
3. Dx only through genetic studies No real abnormal lab tests
4. Most often is not picked up

D. Alpha-Thalassemia Trait (Alpha thalassemia minor)

1. 2 deletions
2. Results in mild asymptomatic microcytic anemia
3. Red cells are hypochromic and microcytic
4. The deletions can be on the same chromosome ($\alpha\alpha/--$) or on different chromosomes ($\alpha-/ \alpha-$). The two types can be differentiated only by genetic analysis
5. Common among individuals of Southeast Asian, African, and West Indian descent. Also common among those of Mediterranean ancestry
6. Individuals with Southeast Asian ancestry are more likely to carry two gene deletions on the same chromosome and are therefore at increased risk of having offspring with the two more severe forms of alpha-thalassemia listed below

E. Hemoglobin H disease

1. 3 gene deletions
2. Results in a mild to moderate hemolytic anemia
3. Only one functional alpha chain
4. The abnormal cells contain a mixture of Hgb Bart and Hgb H
5. Other complications include: gallstones, splenomegaly, increased risk for infection, jaundice and leg ulcers

- F. Alpha-Thalassemia Major (aka Hemoglobin Bart's Disease)
 - 1. All 4 deletions of the alpha chains
 - 2. Without alpha chains, hemoglobin Bart and hemoglobin H are formed
 - 3. Bart's hemoglobin is stable but incapable of oxygen exchange
 - 4. This result is incompatible with life
 - 5. Associated with hydrops fetalis, intrauterine death and preeclampsia

- G. Alpha-Thalassemia and Sickle cell disease

Because Hgb S results from an abnormality of the Beta-chain, both heterozygous (AS) and homozygous (SS) forms of can be inherited with heterozygous or homozygous alpha thalassemia trait. This lessens the proportion of Hgb S in those with sickle cell trait and in those with Hgb SS it lessens the severity of sickle cell disease

- H. Differential Diagnosis
 - 1. Iron deficiency anemia
 - 2. Anemia of chronic disease
 - 3. Beta thalassemia
 - 4. Lead poisoning

- I. Screening for alpha Thalassemia
 - 1. Low MCV (usually in 70-75 range)
 - 2. Possible anemia
 - 3. Increase in Hgb A or normal
 - 4. Decrease in A2 or normal
 - 5. Normal Hgb F

- J. Management
 - 1. Test FOB (CBC, Hgb electrophoresis); if low MCV or abnormal hemoglobin electrophoresis, Prenatal Diagnosis referral
 - 2. Counseling (possible to have a baby with severe alpha thal disorder)

Beta-Thalassemia

- K. Beta-Thalassemia minor
 - 1. Heterozygous beta globin gene mutation
 - 2. Characterized by mild or no anemia
 - 3. Usually asymptomatic
 - 4. Potential risk to offspring if FOB is also carrier
 - 5. No associated risks during pregnancy and birth

- L. Beta-Thalassemia Intermedia
 - 1. Due to a compound heterozygous state
 - 2. Results in anemia of intermediate severity
 - 3. Patients are not generally transfusion dependent but may require transfusions periodically

- M. Beta-Thalassemia Major (aka Cooley's anemia)
 - 1. Homozygous form of Beta thal in which there is no globin production
 - 2. Results in severe anemia
 - 3. Chronic blood transfusions necessary

4. Chronic organ damage
5. Infants diagnosed with this often die during first 2 years of life. If they survive, they suffer marked skeletal changes and growth restriction, and fail to reach sexual maturity
6. If a woman reaches childbearing age, she is very unlikely to conceive, therefore we are unlikely to ever see a woman with this condition

N. Differential Diagnosis

1. Iron deficiency anemia
2. Anemia of chronic disease
3. Alpha thalassemia
4. Lead poisoning

O. Diagnosis/Lab values

Lab value	Abnormal	Range seen in Beta Thal
Hgb A2	>3.5%	3.5-7% *
MCV	<80	55-75
MCH	<26	16-25
HgF	>2%	2-5% (50% of cases)
Hgb/Hct	<11.0/	Mild or normal range
Iron studies	-----	Normal

***NOTE:** If a coexisting iron deficient anemia exists, Hgb A2 may be falsely normal. After 2 months of iron therapy, A2 should rise. Therefore, if repeat CBC shows improved Hgb/Hct with MCV still less than 80 and normal ZPP, should repeat hemoglobin electrophoresis

1. Diagnosis is made by Hgb A2, MCV and MCH. Hgb F may or may not be increased
2. Mother is found to be a carrier with genetic testing. Many people do not actually end up getting this expensive test and it becomes a presumptive dx. The issue is revisited if the FOB has hematologic screening consistent with a thalassemia
3. It is also possible to have a co-existing alpha and beta thalassemia, as well as sickle-cell gene and beta-thalassemia gene, but these are rare

P. Management

1. Iron therapy to rule out iron deficiency anemia as a cause for increase in A2
2. Elevated zinc protoporphyrin indicates iron deficiency (this test is automatically run by the lab if the MCV is < 80)
3. Test FOB with CBC and Hemoglobin electrophoresis; no FU if normal MCV and hemoglobin electrophoresis
4. If unable to test FOB's blood, or if FOB's MCV < 80 or abnormal hemoglobin electrophoresis, refer the patient to Prenatal Diagnosis
5. Consult High Risk OB service if fetus is thought to be at risk after hematologic screening is completed

Q. Getting FOB Tested

1. If patient is from 5M, FOB can register on 5M
2. FOB needs CBC and hemoglobin electrophoresis
3. Document his name, DOB, and B # in the mother's chart

4. He must register. He must tell eligibility that this is a test necessary for the pregnancy. He is not charged, as this is related to the pregnancy and MediCal will pay
5. He should then go to the lab
6. If he has a low MCV or abnormal hemoglobin electrophoresis then a Prenatal Diagnosis referral should be made for the mother

QUICK SUMMARY

In the absence of iron deficiency:

Hgb A2>3.5

MCV < 80

→Suggest Beta-Thal

Hgb A2=normal

MCV<80

→Suggest Alpha-Thal

Table 2 SERUM VALUES IN MICROCYTIC ANEMIAS (MCV <80 FL)					
	Serum Iron	Serum Ferritin	TIBC	Transferrin Saturation	Comments
Iron deficiency					
Early	nl	↓	nl	nl	nl MCV, RDW, FEP, Hb/Hct
Late	↓	↓	↑	↓	↓ MCV, then ↓ Hb/Hct; ↑ RDW; ↑FEP; ↑ retic with iron therapy
Thalassemia traits	nl	nl/↑	nl	nl	↑ RBC count; nl RDW; nl FEP; nl retic despite iron therapy.
Anemia of chronic disease	↓	nl/↑	↓	↓	nl RDW; ↑FEP; nl/↓ RBC; nl retic despite iron therapy
Lead poisoning	nl/↑	nl	nl/↓	↑	↑ FEP
Sideroblastic anemia	↑	↑	nl/↓	↑	Rare

Abbreviations
 nl = normal; ↓ = decreased; ↑ = increased
 MCV = Mean corpuscular volume
 FEP = Free erythrocyte protoporphyrin
 RDW = Red cell distribution width
 Hb/Hct = Hemoglobin, hematocrit
 RBC = Red blood cell count
 Retic = Reticulocyte count

Serum values in microcytic anemias
 (Table 2 p32 from M. Mays article)

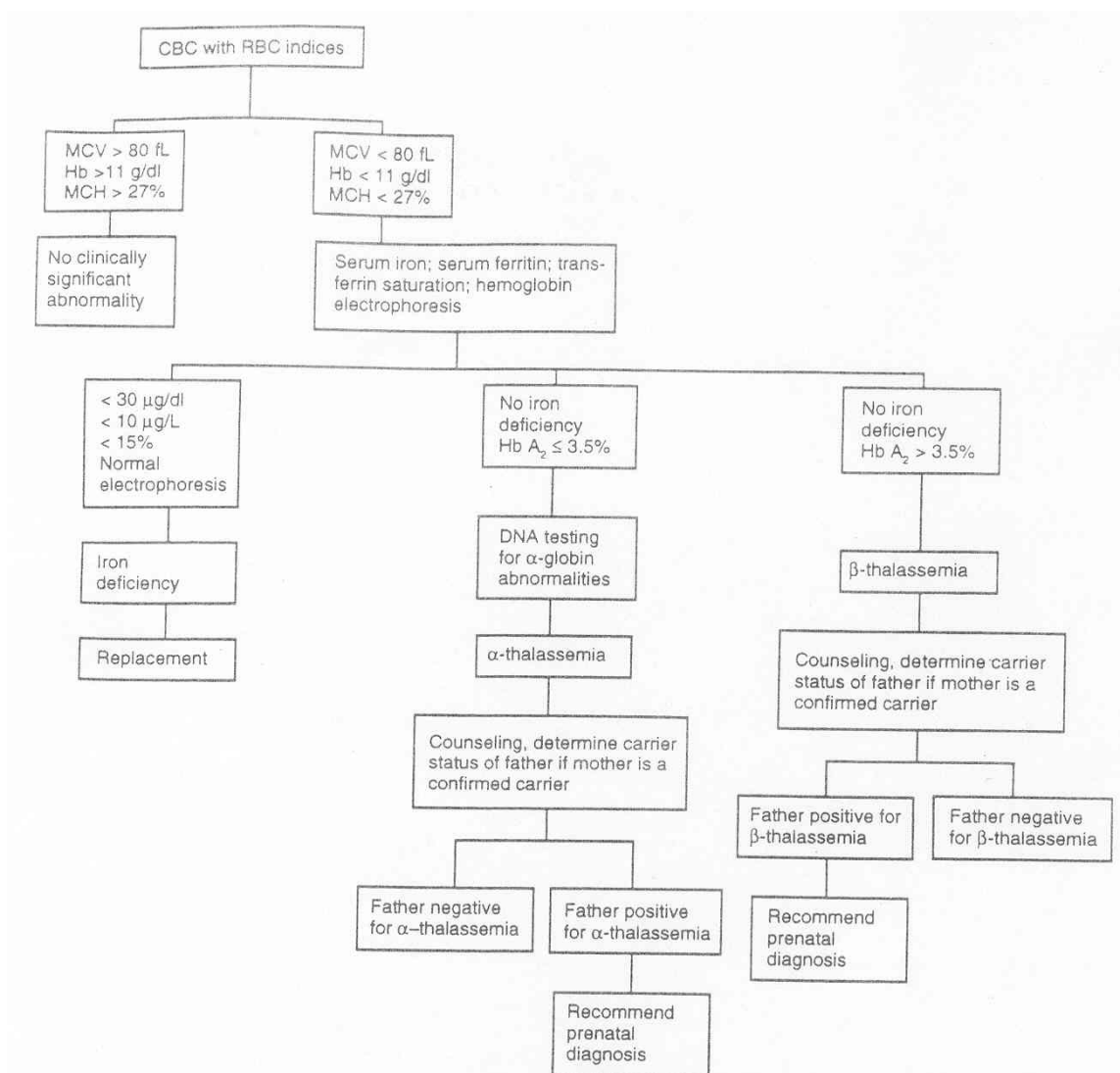
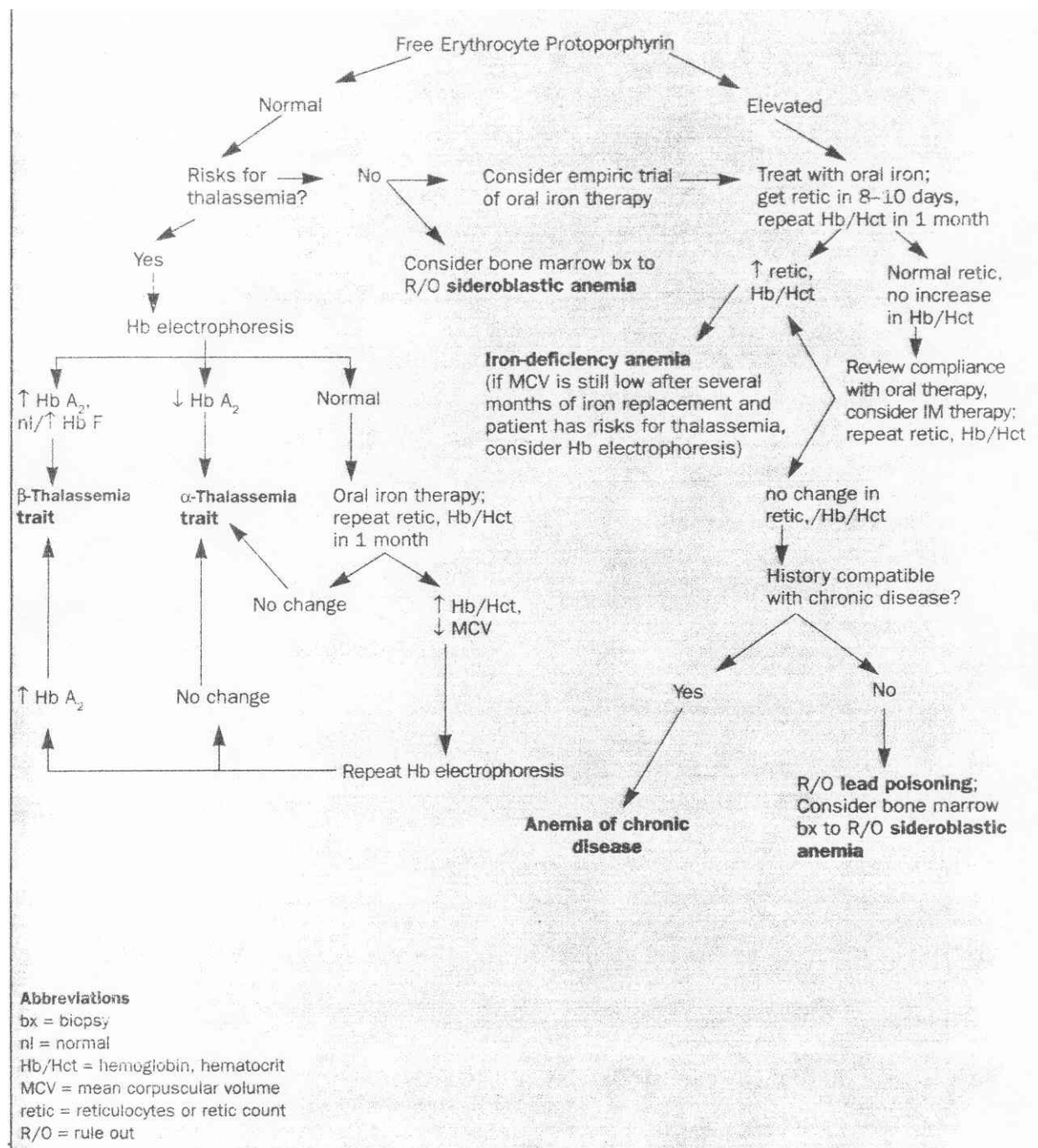


FIG. 1. Basic antepartum workup for hematologic assessment. Abbreviations: CBC = complete blood count; RBC = red blood cell; MCH = mean corpuscular hemoglobin; MCV = mean cell volume; Hb = hemoglobin. The decision threshold for the presence or absence of disease (80 fL) may vary with laboratories or patient populations.



Basic antepartum workup for hematological assessment
 (From ACOG Bulletin)

Figure 1: Work up of Microcytic Anemia using Free Erythrocyte Protoporphyrin Levels
 (From Mary Mays article)

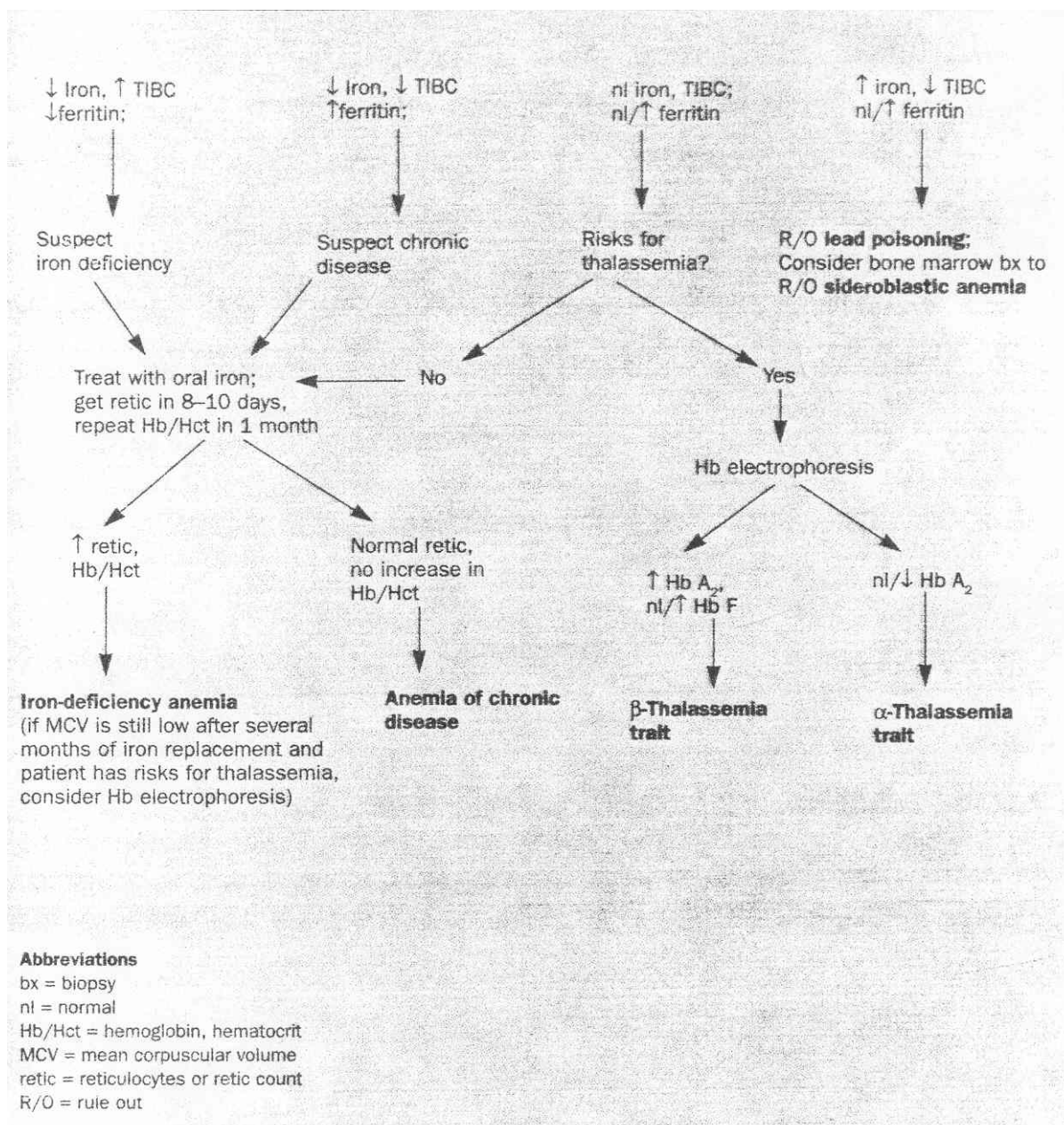


Figure 2: Work up of Microcytic anemia using Iron studies
(From Mary Mays' article)

Sickle Hemoglobin

Sickle cell trait

A. Definition

Inheritance of the gene for Hemoglobin S from one parent and Hemoglobin A from the other parent results in sickle cell trait. Women with the trait have far more normal Hemoglobin A than women with sickle cell disease. 8% of Black Americans carry the gene for sickle Hgb

B. Pregnancy Implications

1. No effect on frequency of abortion, perinatal mortality, low birth weight or pregnancy induced hypertension
2. Urinary infection is 2X as common; reported 13% of women with sickle cell trait have asymptomatic bacteruria during their pregnancy (ACOG Bulletin)
3. Possible mild anemia
4. Hematuria

C. Diagnosis

1. Hgb S or C on Hgb electrophoresis
2. If the mother has Hemoglobin S or C on hemoglobin electrophoresis, then FOB needs CBC and hemoglobin electrophoresis
3. If FOB unable to be tested, or low MCV or abnormal hemoglobin electrophoresis, refer patient to Prenatal Diagnosis
4. See above for how to expedite blood tests in FOB

D. Management

1. Q trimester urine C+S
2. If FOB unable to be tested, or low MCV or abnormal hemoglobin electrophoresis, refer patient to Prenatal Diagnosis
3. Consultation not necessary
4. (Williams Obstetrics, 21st edition, pp1320-1323)

Sickle cell disease

A. Definition

Sickle cell disease exists when the sickle Hgb occurs with another abnormal Hgb (Hgb SS, Hgb S beta-thal and Hgb SC are the most common types). Red cells sickle due to deoxygenation, which causes ischemia to organs.

B. Pregnancy implications

1. Increased maternal and fetal morbidity and mortality
2. All are transferred to MD High Risk Ob clinic.

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Peripheral Smear

It allows the visual evaluation of the size, shape and structure of RBCs and WBCs, which often has diagnostic significance.

Red blood cell count

This value gives you an estimate of the number of RBCs per cubic millimeter.

Nrml values are: 4.0-5.55 million/cubic mmf or women (slightly more in men).

Reticulocyte count

This is an estimation of the amount of cells which are in the intermediate position between nucleated RBCs and mature (nonnucleated, fully hemoglobinated) RBCs. Nrml: <2% of total RBC count.

Red blood cell distribution width (RDW)

This value calculates the difference in size of RBCs. Size variance is due to RBC fragmentation, factor deficiency and hemoglobinopathies. Often RDW will increase before an abnormal MCV is evident. RDW is never decreased. Nrml: <14%.

Red blood cell indices

This refers to the following tests: MCV, MCH, MCHC and RDW.

Serum ferritin

Ferritin is the major iron storage compound.

Nrml: 20-120ng/ml for women, less for men.

Serum iron

Nrml: 75-175 micrograms/dl.

TIBC (Total Iron Binding Capacity)

TIBC is the approximate estimate of transferrin. Since transferrin is not the only protein that can bind to iron, it is approximate. This tends to be less accurate in cases of iron overload. Nrml: 250-410micrograms/dl; saturation 20-55%.

Hepatitis B in Pregnancy

Definition

1. Viral hepatitis is a systemic infection that primarily affects the liver
2. Hepatitis B virus (HBV) infection remains a major public health problem in the US and worldwide
3. Acute HBV may be symptomatic or may have mild to severe symptoms

Prevalence

1. Hepatitis B surface antigen (HBsAg) is present in about 1/1000 adults in the US and Europe. Present in 2-25% of adults in tropical areas and Southeast Asia
2. Chronic HBV (5-10 % of acute HBV infections progress to a chronic state) carries severe long term consequences such as chronic liver disease, cirrhosis, and hepatocellular carcinoma

Transmission

1. HBV has an incubation period of 1 to 6 months
2. HBV infection occurs through contact with bodily fluids that contain the virus i.e. blood, semen, vaginal-cervical secretions
3. In pregnancy, HBV can be transmitted transplacentally (rare), intrapartum, and postpartum. 85% of perinatal transmission is thought to be during the intrapartum period
4. While HBV has been found in breastmilk, there is no apparent transmission of HBV to infants who receive HB immune globulin and the Hepatitis B vaccine at birth

Categories

Most patients with hepatitis B fall into one of four categories:

1. Acute hepatitis
 - a. Incubation period from exposure to symptoms averages 2-3 months
 - b. During symptomatic phase: AST/ALT elevated, +HBsAg, high HBV viral load
2. Chronic hepatitis
 - a. HBsAg + for >6mo
 - b. HBeAg can be present or absent (HBeAg+ are more likely to progress to cirrhosis)
 - c. HBV DNA >10⁴
 - d. Persistent or intermittent elevations in ALT
 - e. Evidence of inflammation on liver biopsy
3. Asymptomatic carriers
 - a. HBsAg + for >6mo
 - b. HBeAg + or HBeAg -
 - c. HBV DNA <10⁴
 - d. Persistent normal ALT
 - e. No inflammation on liver biopsy
4. Resolved hepatitis
 - a. History of acute or chronic Hep B
 - b. HBsAg-, HBsAb + or -, HBcAb+
 - c. Must be HBsAb + to be considered immune
 - d. HBV DNA undetectable
 - e. Normal ALT

Clinical Illness

1. Nonhepatic symptoms (rash, fever, arthralgia, arthritis) generally precede jaundice

2. Signs and symptoms may include nausea, vomiting, right upper quadrant abdominal pain, enlarged and tender liver, fever, chills, general weakness and exhaustion, and headache
3. About 70% of patients with acute HBV will have sub-clinical infection

Implications in pregnancy

1. 85% of neonates infected with HBV will become chronic carriers, with risks of chronic liver disease and hepatocellular carcinoma
2. Breastfeeding is considered safe for mothers with chronic HBV infection as long as the infant is vaccinated against hepatitis B

Lab Tests

1. All pregnant women will be screened for Hep B with a HBsAg, which determines if there is an active or chronic infection with HBV
2. See below for list of hepatitis B serology markers

Management of Positive HbsAg

1. Obtain history of hepatitis, recent symptoms of hepatitis (see below), family members with hepatitis
2. Ask re symptoms (i.e anorexia, nausea, vomiting, fatigue, RUQ pain, icterus, light color stool, dark urine)
3. Examine for jaundice, icterus, enlarged or tender liver

Initial Lab tests:

1. AST, ALT, Coags, HBV DNA (viral load), , HBeAg, HBeAb, , HepA Ab, HBcAb(core), IgM only if symptomatic for acute infection (*Note anti-HBc=HBcAb ; anti-HBs =HBsAb*)
 - a. See algorithm below or categories above for results interpretation
2. Screen for other STIs (if not already done) including HIV
3. HCV Ab, HAV Ab

After Labs:

1. Send to High Risk OB on Wed: preferably in the second trimester
2. RUQ sono if history suggests perinatally acquired HBV, HIV+ or or abnormal LFTs

F/U Labs:

1. As indicated in High Risk consult.
 - a. If AST/ALT <19 and initial HBV DNA ≤105 will re-check LFT's and HBV DNA at 24-28 weeks
2. Consult for acute hepatitis or abnormal LFTs
3. Family and household members should be offered HBV testing and the Hepatitis B vaccine. Adults may be referred to the Infectious Disease clinic at x8492, children to Pediatric clinic at x8374
4. Encourage the Hepatitis A vaccine to patients with chronic HBV infection (inactivated virus is considered safe in pregnancy)
5. Ask about sexual, needle-sharing and household contacts. Refer for immunization (immunization locations: <http://www.sfhepbfree.org/info.php?nv=2&snv=1>)
6. Amniocentesis: Risk of transmission from amniocentesis is low, but may be higher in the setting of + HBeAg and/or high HBV DNA levels. Prior to amnio check levels to ascertain risk/benefit.
7. Teaching
 - a. Avoid alcohol now and in the future
 - b. Do not donate blood, body organs, or other tissue
 - c. Do not share toothbrushes, dental appliances, toothpicks, razors, nail clippers, needles, tattoo or piercing equipment or other personal care articles that might have blood on them
 - d. Safe sex (provide condoms) until partner completes vaccine series

- e. Implications for neonate –babe will receive HB Immune Globulin and HB vaccine which is 85-95% effective in preventing HBV infection in the neonate (lower rates for higher maternal viral loads>108)
 - f. Labor: patients who are HBsAg positive are not eligible for expectant management with prelabor rupture of membranes. They should be admitted for labor induction at the time of membrane rupture (increased risk of transmission with prolonged membrane rupture). C/S is not indicated to reduce vertical transmission. No FSE
 - g. Breastfeeding is not contraindicated
 - h. For patients with chronic HBV infection, discuss the importance of long term follow-up and avoidance of hepatotoxic drugs, alcohol, and herbs. Patients with chronic HB need serial LFT's to rule out progression of disease (approx every 6 months)
8. Coordinate with PHN for follow-up of patient and family

Vaccination for Hepatitis B

1. HBV vaccine is safe in pregnancy
2. See following table for who is at risk for HBV and should be vaccinated:
3. Determine if there is already immunity to HBV by drawing HbsAb
4. If not immune, vaccinate with Recombivax 10 mcg IM (2nd and 3rd dose given 1 month and 6 months after first dose)

References

1. ACOG Practice Bulletin No. 86 (2007): Viral hepatitis in pregnancy. Obstetrics and gynecology, 110(4), 941-56.
2. Star, W. et al. (1999). Ambulatory obstetrics (3rd edition). (pp 715-21, 724-8). San Francisco, CA: UCSF Nursing Press.
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TABLE 9.11. GROUPS AT INCREASED RISK OF HEPATITIS B VIRUS INFECTION AND FOR WHOM HEPATITIS B VACCINE IS RECOMMENDED

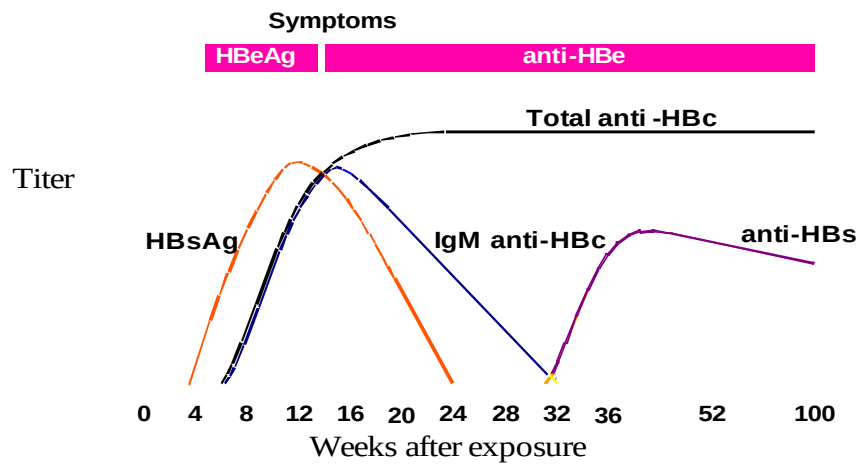
Medical, dental, laboratory workers, and others with exposure to human blood
Men who have sex with men
Heterosexuals with multiple sex partners or with sexually transmitted diseases
High HBV-endemic populations (e.g., Alaskan natives)
Household contacts of HBsAg-positive persons
Parenteral drug users
Hemophilia patients
Hemodialysis patients
Patients for whom multiple blood/blood product infusions are anticipated
Prison inmates and staff
Patients and staff of institutions for mentally disabled
Travelers to high HBV-endemic areas with anticipated exposure to blood, sexual contacts with locals, or prolonged residence in household with locals
Newborn infants of serum HBsAg-positive mothers*

HBV, hepatitis B virus; HBsAg, hepatitis B surface antigen.

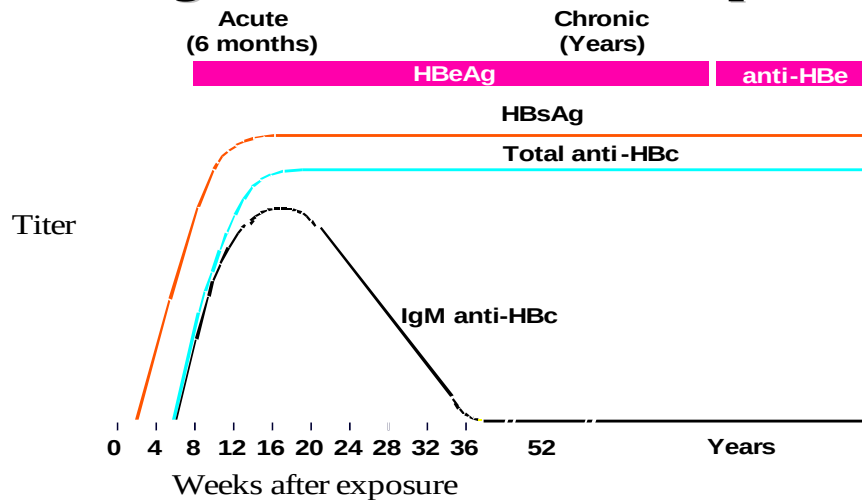
*All newborns should receive hepatitis B vaccine.

Sources: Centers for Disease Control and Prevention Protection against viral hepatitis. Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Morb Mortal Wkly Rep* 1990;39[RR-2]:1-26, with permission; Advisory Committee on Immunization Practices (ACIP). Hepatitis B virus: a comparative strategy for eliminating transmission in the United States through universal childhood vaccination. *MMWR Morb Mortal Wkly Rep* 1991;40[RR-13]:1-25.

Acute Hepatitis B with Recovery



Progression to Chronic Hepatitis B



(Note anti-HBc=HBcoreAb ; anti-HBs =HBsAb)

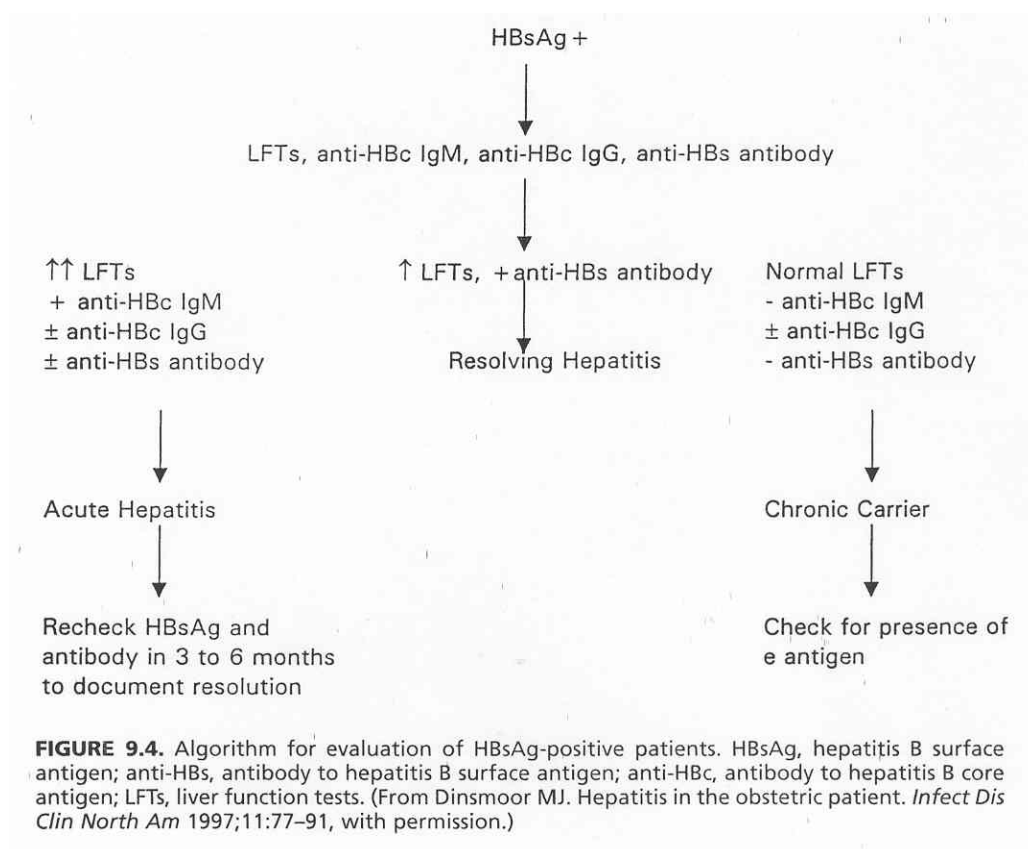
TABLE 9.10. COMMONLY ENCOUNTERED SEROLOGIC PATTERNS OF HBV INFECTION

HBsAg	Anti-HBs	Anti-HBc	HBeAg	Anti-HBe	Interpretation
+	–	IgM	+	–	Acute HBV infection, high infectivity
+	–	IgG	+	–	Chronic HBV infection, high infectivity
+	–	IgG	–	+	Late acute or chronic HBV infection, low infectivity
+	+	+	+/-	+/-	1. HBsAg of one subtype and heterotypic anti-HBs (common) 2. Process of seroconversion from HBsAg to anti-HBs (rare)
–	–	IgM	+/-	+/-	1. Acute HBV infection 2. Anti-HBc window
–	–	IgG	–	+/-	1. Low-level HBsAg carrier 2. Remote past infection
–	+	IgG	–	+/-	Recovery from HBV infection
–	+	–	–	–	1. Immunization 2. Possible remote infection 3. False-positive

HBV, hepatitis B virus; HBsAg, hepatitis B surface antigen; anti-HBs, antibody to hepatitis B surface antigen; anti-HBc, antibody to hepatitis B core antigen; HBeAg, hepatitis B e antigen; anti-HBe, antibody to hepatitis B e antigen; IgM, immunoglobulin M; IgG, immunoglobulin G.
Source: From Baker DA, Hepatitis B infection in pregnancy. In: Mead PB, Hager WD, Faro S, eds. *Protocols for infectious diseases in obstetrics and gynecology*. Malden, MA: Blackwell Science, 2000:202–214, with permission.

Interpretation of the Hepatitis B Panel

(Note anti-HBc=HBcAb ; anti-HBs =HBsAb; anti-HBe= HbeAb-SFGH lab slips use HBcAb etc.)



Hepatitis C in Pregnancy

A. Definition

1. Viral hepatitis is a systemic infection that primarily affects the liver
2. Hepatitis C (HCV) is a viral infection of the liver causing acute, and more importantly, chronic infection that can lead to cirrhosis and death

B. Prevalence

1. Overall prevalence of HCV in the United States is about 1.8%, although rates are higher among at risk groups, such as injection drug users, low socioeconomic status, and high risk sexual behavior
2. Infection is often asymptomatic, and 85% of those infected go on to develop chronic infection
3. Of the chronically infected, 20% will develop cirrhosis, with increased risk of liver failure, hepatocellular carcinoma, and death
4. About 40% of chronic liver disease in the United States is attributed to chronic HCV infection
5. Screening the United States blood supply for HCV began in 1992

C. Transmission

1. HCV is transmitted parenterally.
2. Risk factors include history of blood transfusion (if transfused before widespread screening of blood products began in the late 1980s), injection drug use, accidental needle sticks, exposure to multiple sex partners, body piercing and tattoos, acupuncture, low socioeconomic status, and intranasal cocaine use
3. Sexual transmission of HCV has been documented but appears to be inefficient
4. Levels of HCV RNA in semen, saliva, urine, and other bodily fluids of persons with chronic HCV infection are extremely low or undetectable
5. There is no vaccination against HCV

D. Clinical Illness

1. Infection with HCV is most often asymptomatic
2. The acute phase of HCV infection is often asymptomatic and without jaundice. Only 30 to 40 percent of patients will present with the typical clinical signs of hepatitis, and only 20 to 30 percent will appear with jaundice

E. Implications in pregnancy

1. Mother-to-child transmission occurs in about 5% of births to infected women
2. There is no difference in the risk of vertical transmission between infants born vaginally or by Cesarean birth, nor is there any evidence of an increased risk of HCV in breastfed infants
3. Co-infection with HIV increases the risk of transmission
4. Pregnancy usually does not affect the clinical course of acute or chronic HCV, nor does HCV appear to have an adverse effect on the mother or fetus, although chronic active hepatitis is associated with preterm birth and IUGR
5. Treatment for acute HCV infection is not currently routinely recommended. Medications used for treatment of chronic HCV infection (Alpha interferon and ribavirin) are contraindicated in pregnancy.

F. Lab Tests

1. Diagnosis of HCV infection is made EIA detection of antibody to HCV. Sensitivity is 97%, and specificity is dependent on the population tested. In low risk populations, the false-positive rate can be as high as 50-60%
2. Consider RIBA (recombinant immunoblot assay) for confirmatory testing
3. The main benefit of HCV testing is identifying asymptomatic women with chronic HCV infection, so they and their infants may receive appropriate follow-up

4. Per CDC guidelines: offer HCV antibody testing to any patient who:
 - a. has used injection drugs
 - b. received a blood transfusion or organ transplant before July 1992
 - c. long term hemodialysis
 - d. persistent elevation of liver transaminase or other evidence of liver disease
 - e. recipients of tissue transplant (eg, corneal, musculoskeletal, skin, sperm, ova)
 - f. users of intranasal cocaine or other noninjected illegal drugs
 - g. history of tattooing or body piercing
 - h. history of sexually transmitted infections or multiple sexual partners
 - i. long term steady sex partner of a HCV positive person

G. Management of positive HCV antibody test results

1. Consultation re: management can be obtained either by phone or by e-consult via the UCSF Clinician Consultation Center (CCC). Here is information about their services:

Hepatitis C Warmline – Free advice for clinicians

The University of California, San Francisco's Clinician Consultation Center provides hepatitis C management consultation to health center providers. This is a free, real-time clinician-to-clinician consultation service, addressing the care and treatment of people with hepatitis C. Access the Hep C Warmline toll-free at: 1-844-437-4636 (Monday-Friday, 6 a.m.- 5 p.m. PT). To access the on-line consultation process log on to <http://nccc.ucsf.edu/clinician-consultation/hepatitis-c-management/>

2. Submit an e-referral to HROB outlining the plan recommended by the CCC, and inquire whether a HROB visit is needed.
3. Teaching
 - a. avoid alcohol now and in the future
 - b. do not take any potentially hepatotoxic drugs or herbs without discussing it with midwife
 - c. do not donate blood, body organs, or other tissue
 - d. do not share toothbrushes, dental appliances, toothpicks, razors, nail clippers, needles, tattoo or piercing equipment or other personal care articles that might have blood on them
 - e. discuss with partners the low but not absent risk of sexual transmission (encourage safe sex and provide condoms)
 - f. patients who are hepatitis C positive are not eligible for expectant management with prelabor rupture of membranes. They should be admitted for labor induction at the time of membrane rupture (increased risk of transmission with prolonged membrane rupture)
 - g. breastfeeding is not contraindicated, however, with cracked or bleeding nipples the CDC recommends to refrain from nursing until the nipple has healed
 - h. will need primary care follow-up postpartum

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1. ACOG Practice Bulletin No. 86 (2007): Viral hepatitis in pregnancy. Obstetrics and gynecology, 110(4), 941-56.
2. Plunkett BA, Grobman WA. (2005). Routine hepatitis C virus screening in pregnancy: a cost-effectiveness analysis. Am J Obstet Gynecol, 192(4):1153-61
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Herbal Therapies
Herbal Tonics for Pregnant and Breastfeeding Women

From *Herbs and the Childbearing Woman* by Cynthia Belew, Certified Nurse-Midwife

Drinking herbal beverage teas regularly while pregnant and breastfeeding can nourish and tone the uterus, liver and kidneys, soothe the nervous system, increase energy, and aid digestion. This is an excellent and delicious way to support optimal health during pregnancy.

A. Definitions

1. Nutritive

All of the herbal teas listed below provide a rich supply of many of the nutrients that are essential for a healthy pregnancy, including calcium, magnesium and iron. A large mug of a mixture of these teas contains as much calcium as in a cup of milk, and in a form that is probably more easily assimilated by the body.

2. Tonic

In addition to their nutritive value, these herbs have a tonic effect. Tonics may be thought of as special foods that have a highly nourishing effect on a particular organ or body system. Tonics are safe for long term use and in large doses. In fact, daily use over time is necessary for effectiveness. Since the liver and kidneys have a lot of extra work to do during pregnancy, with 50% more blood to clean, and a higher body metabolism producing extra waste products, herbs to support these organs and processes of elimination are beneficial.

3. Infusion

In order to obtain the most benefit from these herbs it is best to make an infusion, which is stronger than a regular tea. An infusion uses more dried herb, and allows it to steep in the water for longer, so that all of the minerals and other compounds to be extracted into the water. (See Appendix A: How to make an infusion)

B. Herbal teas

Combine two, or more of the following herbs together including one for flavoring.

1. Red raspberry

Red raspberry leaf has been used for centuries by women during pregnancy as a nourishing uterine tonic. It has a normalizing effect on the uterus, increasing tone in lax muscles but relaxing a uterus that is too irritable or has too much tone. It is thought to facilitate an easier labor. It increases the flow of breast milk in the post partum period.

2. Nettle

Nettle is highly nutritive and is considered one of the very best overall tonics by many herbalists. It is especially high in iron, and may be used to correct anemia. It has a tonic effect on the kidneys, helping them to eliminate waste products more effectively. Women report an increase in energy when they drink nettle tea regularly. Used during pregnancy it is believed to decrease the risk of excessive bleeding during childbirth. It increases the flow of milk in breastfeeding women.

3. Dandelion root
Dandelion root is a liver tonic that gently increases bile flow. It aids digestion and waste elimination, decreases edema (as does nettle) and is very high in calcium and other substances that promote bone strength. It also increases the flow of breastmilk in the postpartum period.
4. Wild Oats
Wild oats is highly nourishing and calming to the nervous system.
5. Lemon Balm
Lemon Balm is highly nourishing and calming to the nervous system.
6. Chamomile
Chamomile is highly nourishing and calming to the nervous system. Chamomile also aids digestion.
7. Linden
Linden is highly nourishing and calming to the nervous system and aids digestion.
8. Lavender
Lavender is highly nourishing and calming to the nervous system.
9. Spearmint
Spearmint adds flavor and aid digestion. Mint is very high in calcium and magnesium.
10. Cinnamon
Cinnamon adds flavor and aids digestion.
11. Rose hipps
Rose hipps add flavor and Vitamin C
12. Stevia
Stevia may be used as a sweetener.

How to make an infusion

- C. To make an infusion
 1. Place an ounce of a mixture of several herbs (an ounce is usually approximately ½ to one cup by volume) in a quart jar, such as a canning jar, and fill it with boiling water.
 2. Cap it tightly, and allow to sit for at least 30-60 minutes, or for several hours or overnight if it is convenient. Allowing it to steep longer may extract more of the minerals.
 3. Strain it all at once and refrigerate, or store it unstrained in the refrigerator and pour it through a strainer as you serve it.
 4. Drink 6-10 ounces 2-3 times daily.
 5. If it is too strong, dilute it to your taste. Add honey, stevia, lemon, water, juice or carbonated water as desired to vary the taste. For variety, place one or two teabags of your favorite beverage herb in the jar while the tea is infusion.
 6. If you have a French coffee press this is a convenient way to make it.
 7. The tea will keep for 2-3 days in the refrigerator, and for about 2-4 hours unrefrigerated.
 - a. It may be convenient to strain it directly in to several plastic or glass water bottles and keep them in the refrigerator, then you can easily take it with you when you leave the house.

Herbal Therapies
Herbs to Avoid or Use with Caution during Pregnancy
Listed by Common Name

From Herbs and the Childbearing Woman, Guidelines for Midwives, by Cynthia Belew, CNM

For those herbs that are commonly used as culinary spices or teas, the caution refers to use in medicinal preparations and dosages, and is generally not relevant to their use as beverage teas and spices (19). This includes Anise, Basil, Celery Seed, Cinnamon, Fennel, Lavender, Marjoram, Rosemary, Sage, Thyme, and others.

Some of the herbs are listed to use with caution because of their potential uterine stimulating properties but are appropriate for use during the last month of pregnancy or during labor, i.e., Black Cohosh, Cottonroot, Inmortal, and Spikenard.

Some of the herbs are listed because you would not want to use them long-term throughout pregnancy, but short term use may be appropriate i.e. Horehound, Vervain.

Albizzia
 Achyranthes
 Aconite
 Alder buckthorn
 Alkanet
 Aloe (dried juice)
 American Liverleaf
 American Mandrake
 Andrographis
 Angelica
 Arnica
 Asafetida
 Asarabacca
 Ashwagandha
 Asian Ginseng
 Autumn Crocus

Baneberry
 Barberry
 Barley
 Basil leaf
 Baptisia
 Beebalm
 Bethroot (Trillium)
 Birthwort (Aristolochia)
 Bilberry
 Bishops Weed
 Black Cohosh -Except at term
 Bladderwrack
 Bleeding Heart
 Blessed Thistle
 Bloodroot
 Blue Cohosh
 Blue Flag
 Blue Lobelia
 Blue Vervain
 Bogbean
 Borage
 Brook Mint
 Broom
 Buchu
 Buckeye
 Buckthorn
 Bugleweed
 Butternut (Petasites)
 Bryonia

Calamus
 California Buckeye

California Poppy
 Calif. Spikenard
 Camphor
 Canada Snakeroot
 Capillary Artemesia
 Cascara Sagrada
 Cassia
 Castor

Catnip
 Celandine
 Celery Seed
 Chaparral
 Chastetree
 Chervil
 Chinese Goldthread
 Chinese Motherwort
 Chinese Rhubarb
 Cinchona Bark
 Cinnamon Bark
 Coffee
 Cola
 Coltsfoot
 Colocynth
 Cocklebur
 Comfrey
 Cornflower
 Corn Smut
 Corydalis
 Cotton root (except at term)
 Culver's Root
 Cyathula

Damiana
 Delphinium
 Devil's Claw
 Devil's Club
 Dogbane
 Dong Quai
 Dyer's Broom

Ergot
 European Mistletoe
 Elecampane
 Ephedra (MaHuang)
 False Hellebore
 Fenugreek
 Feverfew
 Forsythia
 Fritillary

Gelsemium
 Ginkgo
 Ginseng (Panax)
 Goat's Rue
 Goldenseal
 Goldthread

Gotu kola	Motherwort	Saw Palmetto
Guarana	Mugwort	Schisandra (Uterine stimulant)
Guggul	Myrrh	Scouring Rush
	Nasturtium	Senega Snakeroot
Henbane	Nutmeg	Senna
Hellebore		Sete Sangrias
Hops	Ocotillo	Shepherd's Purse
Horehound	Oleander Leaf	Sichuan Lovage
Horse Chestnut	Oregon Grape	Sichuan Pepper
Horsetail	Osha	Silk Tassel
Hounds Tongue		Silk Tree
Hyssop	Parsley	Southernwood
	Pasque Flower	Spikenard
Indian Root	Pau d'arco	Stillingia
Inmortal	Peach Leaf, Tree	Suma
Ipecac	Pennyroyal	Sweet Annie
Jamaican Dogwood	Periwinkle	Sweet flag (acorus)
Japanese Arisaema	Peruvian Bark	Syrian Rue
Jatamansi	Petacites	
Jimsonweed	Peyote	
Job's Tears	Phellodendron Bark	Tansy
Joe Pye	Pinellia	Thuja
Jujube Seeds	Pleurisy Root	Thyme
Juniper berries	Poke Root	Tiger Lily
	Prickly Ash	Tobacco
Kava	Psoralea	Tree Peony Bark
	Purging Buckthorn	Trichosnthes
Lemongrass	Purselane	Turkey Corn
Licorice	Pulsitilla	Turmeric (safe for normal culinary use)
Liferoot		
Lily of the valley	Quassia	Uva Ursi
Lobelia	Quinine	Virginia Snakeroot
Lomatium		Vetiver Watercress
Lovage	Rais Del Oro	
Lycium	Raiz Del Macho	
	Rhododendron	Wahoo
Ma Huang	Rhubarb	Wild Carrot
Mace	Roman Chamomile	Wild Cherry
Madder Root	Rosemary (safe for culinary use)	Wild Ginger
Magnolia	Rue	Wild Indigo
Maidenhair Fern		Wormseed
Maidenhair Tree	Safflower	Wormwood
Male Fern	Saffron	
Marjoram	Sage (safe for culinary use)	Yarrow
Marsh Tea	Sagebrush	Yellow Jasmine
Meadow Saffron	San Qi Ginseng	Yerba Del Lobo
Ming Dang Shen	Sarsaparilla	Yucca
Mistletoe	Sassafras	Yohimbe
Monkshood	Scotch Broom	Zedoary

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4. Moore M. Herbal/medical contraindications 1995. Southwest School of Botanical Medicine.
5. Newell CA, Anderson LA, Phillipson JD. Herbal medicines, a guide for health-care professionals. London: The Pharmaceutical Press; 1996
6. Winston D Herbal therapeutics. Herbalist and Alchemist, NJ.

Herbal Therapies Alternative Methods of Induction

- A. Castor Oil for stimulation of labor has been demonstrated to increase the rate of spontaneous labor and decrease the cesarean section rate without increasing incidence of meconium or adversely impacting Apgar scores (Davis, 1984; Garry, 2000). Caution should be taken in a woman with a uterine scar.

Recommendations for how to use castor oil:

Take it early in the morning, ideally after a good night of sleep.

Stay very well hydrated throughout the day.

Expect mild to severe diarrhea with cramping to occur between 2-6 hours after ingestion of castor oil.

Take 2-4 ounces of castor oil, may repeat one hour later.

Methods of making it palatable for ingestion:

- Scramble it into 2-3 eggs.
- Put in blender with 2 ounces frozen orange juice concentrate and a little ice.
- Put in blender with Dr. Pepper or Root Beer and a little ice.
- Place in a glass jar with 4 ounces root beer, shake vigorously and guzzle immediately.
- Place in a glass jar with 8 ounces of orange juice and 1 tsp baking soda –
- Shake or stir vigorously – this makes it fizzy, like a soda

- B. Breast stimulation for cervical ripening and induction of labor

Stimulation of the nipples, either manually or with a breast pump, may ripen the cervix and increase the chance of being in labor within 72 hours. During breast stimulation the woman should monitor herself for uterine hyperstimulation and discontinue nipple stimulation if this occurs.

Stimulation with an electric breast pump: use pump on one breast for 15 minutes, then a 15 minute rest period, then the other breast for 15 minutes, followed by a 15 minute rest, and so on.

Manual nipple stimulation: Gentle nipple massage using vegetable oil, for one hour three times a day. Massage one nipple at a time.

The Cochrane Database review states “until safety issues have been fully evaluated (breast stimulation) should not be considered for use in a high risk population”

References

1. Davis L. 1894. The use of castor oil to stimulate labor in patients with PROM. JNM 29(6):366-70.
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Herpes Simplex Virus in Pregnancy

A. Definition

1. Genital herpes is a STI caused by HSV-1 and HSV-2
 - a. Oral herpes infections are often caused by HSV-1
2. HSV infections are generally classified into 3 categories:
 - a. Primary infection: Antibodies to both HSV-1 and HSV-2 are absent at the time the patient acquires genital HSV due to HSV-1 or HSV-2
 - b. Non-primary first episode: Acquisition of genital HSV (due to HSV-1) with preexisting antibodies to HSV-2 or acquisition of genital HSV (due to HSV-2) with preexisting antibodies to HSV-1
 - c. Recurrent infection: Reactivation of genital HSV where the HSV type recovered from the lesion is the same type as the antibody in the sera
 - d. Each of these can be symptomatic (with prodromal symptoms or active genital lesions) or asymptomatic (with subclinical shedding of virus without lesions)

B. Incidence

1. HSV-2 causes most cases of genital herpes infections, with an estimated 30-40% being caused by HSV-1
2. Seroprevalence of HSV-2 among U.S. pregnant women is approx. 22%
3. Seroprevalence varies significantly with ethnicity. Non-hispanic white patients are more likely to be seronegative, compared with other racial/ethnic groups (40% vs.11%)
4. Less than 10% of individuals seropositive for HSV-2 give a history of clinically evident disease

C. Transmission

1. Infections by HSV enter through mucus membranes or epidermis, producing typical clinical vesicular lesions, with neural involvement and latency within the dorsal root ganglion, persisting throughout life
2. HSV is transmitted via direct contact with an infected individual. Genital-to-genital contact or oral-genital or oral-oral contact are the most common ways to acquire HSV
3. Most transmission appears to result from sexual contact during a period of asymptomatic shedding
4. The risk for transmission to the neonate from an infected mother is high (30%–50%) among women who acquire genital herpes near the time of delivery and is low (<1%) among women with histories of recurrent herpes at term or who acquire genital HSV during the first half of pregnancy
5. Neonatal herpes infection may be acquired perinatally from an infected lower maternal genital tract, most commonly during vaginal birth
6. Prior infection with HSV-1 may offer some protection from HSV-2. Women with no prior infection with HSV has a 3.7 % chance of seroconverting to HSV-2 during pregnancy, compared with 1.7% in those with prior exposure to HSV-1

D. Clinical Illness

1. After an incubation period of 2-12 days, a large number of thin-walled vesicles occur singly or in clusters over the genital area, ulcerate, crust over, and undergo reepithelialization. They may become secondarily infected
2. There may be a vaginal or urethral discharge. The lesions are painful, and there may be pruritis and/or edema
3. Systemic symptoms of fever, malaise, headache, and myalgias last about a week. There is often tender inguinal lymphadenopathy
4. About a third of primary outbreaks will present as above, with two thirds either asymptomatic or with mild symptoms
5. Symptomatic primary episodes last about three weeks

6. Recurrent episodes last about half as long as primary episodes, with fewer vesicles, no systemic symptoms, and no lymphadenopathy, but may include a prodrome of itching, tingling, neuralgia, or burning
7. It is not clear what triggers episodes and rates of recurrence vary widely
8. Outbreaks tend to be more frequent when infection is caused by HSV-2

E. Differential Diagnosis

1. UTI
2. Vaginitis
3. Chancroid
4. Syphilis
5. Dermatitis

F. Implications in pregnancy

1. Pregnancy does not appear to lead to an increase in frequency or severity of genital herpes infections
2. Risk of acquiring new HSV infection during pregnancy is 2% with 15-25% at risk for seroconversion.
3. Per CDC: insufficient evidence exists to recommend routine HSV-2 serologic screening among previously undiagnosed women during pregnancy
4. The risk of pregnancy complications, other than maternal-fetal transmission at the time of delivery, appears low
5. Acquisition of HSV infection near the time of labor is the major risk factor for transmission to the neonate. Occurrence rates of neonatal herpes infection with shedding at the time of delivery:
 - a. 50% transmission with a primary outbreak
 - b. 33% with a non-primary first episode
 - c. 0-3% with a recurrent episode
6. For women with primary outbreak in the third trimester: seroconversion by the time of labor against the HSV type identified by culture is not associated with perinatal morbidity or any cases of neonatal HSV infection (in one study of 7000 pregnant women)
7. ACOG and CDC guidelines currently recommend offering cesarean:
 - a. If active lesions are noted at the time of labor, or
 - b. If the patient has a history of HSV and she has symptoms of an impending outbreak (burning, tingling, etc)
8. Risk of transmission with an active lesion at the time of birth is 1.7% by c/s vs. 7.7% by vaginal birth
9. Incidence of neonatal herpes: 1/3200 live births. Rates highest among non-hispanic whites (higher seronegative rates increase risk of seroconversion during pregnancy)
10. Neonatal disease may consist of localized disease of the skin, eyes, and mouth, or disseminated disease, including encephalitis. There is a 15% mortality rate with CNS disease and a 57% mortality rate with disseminated disease

G. Lab Tests

1. Viral cultures for HSV are available. It is important to unroof any vesicles in order to obtain the most reliable viral culture. HSV lesions that are healing may not yield positive results
2. High false negative rates with viral culture:
 - a. 25% with primary outbreak
 - b. >50% with recurrence
3. Culture most sensitive when:
 - a. Vesicles intact 90%
 - b. Open lesions 70%
 - c. Crusted lesions 25%

4. PCR testing more sensitive (but this is only done from CSF)
 5. Antibodies for HSV-1 and HSV-2: can be detected 2-12 weeks after acquisition of infection and persist indefinitely. Accurate type-specific HSV serologic assays are based on the HSV-specific glycoprotein G2 (HSV-2) and glycoprotein G1 (HSV-1), which are available at SFGH lab
 6. There are also non-specific IgG and IgM. IgM will rise with an acute infection and IgG is a sign of old infection
 7. When doing a w/u for HSV, if you send a viral culture for HSV, strongly consider sending for type specific serologies. If culture is positive and serologies are negative, then this is a primary outbreak. This is especially important to establish if near term, as this is the greatest risk for transmission.
- H. Management of patient with history of genital herpes (no episode during pregnancy)
1. Document frequency of outbreaks
 2. Ask patient to come in if outbreak occurs so HSV culture can be sent, consider serologies to confirm recurrence vs. non-primary infection
 3. Offer Acyclovir suppression (400 mg PO TID) from 36 weeks until birth (consider starting earlier if increased risk of preterm birth)
 - a. Note: The CDC (and Up To Date) state there is insufficient evidence to recommend routine antiviral suppressive therapy late in gestation for all HSV-2 positive women, who have not had an outbreak in pregnancy
 - b. The studies that indicated benefit of suppression only included pregnant women with a first episode or recurrent lesion during pregnancy
 - c. However, Acyclovir is safe in pregnancy and inexpensive
 - d. Most OB providers at SFGH recommend suppression to women with history of HSV, even if they had no episodes during pregnancy
 4. Education re:
 - a. Mode of transmission and permanency of HSV, implications for partners
 - b. Recurrences and possible symptoms of prodrome
 - c. May shed virus when asymptomatic
 - d. Careful hand-washing to prevent virus spread, especially when handling baby
 - e. Comfort measures if outbreak, treatment to reduce duration of outbreak
 - f. Potential neonatal effects and that she may need c/s if active lesion at time of birth
- I. Management of patient with partner with history genital herpes
1. Review transmission, neonatal effects, handwashing and prevention
 2. Inform her that her partner may shed virus when asymptomatic
 3. Consider doing serologies. May be helpful in counseling pt: if she is + for either type or both, decreased risk of transmission to baby at delivery
 4. CDC recommends that if the woman is seronegative for HSV-2 and her partner is seropositive, intercourse should be avoided in the 3rd trimester. If the woman is seronegative for HSV1- and HSV-2 and her partner is seropositive, intercourse and oral-genital contact should be avoided in the 3rd trimester
 5. Offer condoms and encourage use during pregnancy
 6. Review signs and symptoms—patient to come in if any s/sx of an outbreak
 7. If partner has frequent outbreaks, consider offering him suppression during pregnancy (may decrease risk of transmission by up to 48%)
- J. Management of patient whom you think may have a primary genital herpes infection in pregnancy
1. Viral culture and serologies. It is especially important to perform serologies if this occurs in the third trimester

2. Recognize that without serologies, a primary episode cannot be distinguished from non-primary first episode or recurrent disease. Some people may be having a recurrent infection, despite a negative hx of having a previous episode, as many go unrecognized by both pt and provider
 3. Primary infection constitutes higher risk of transmission
 4. Offer treatment and then suppression. See treatment guidelines below
- K. Management of patient with history of oral-labial herpes
1. While most often caused by HSV-1, may be HSV-2
 2. If HSV-1, less risk of causing disease in neonate, however cases of neonatal herpes have been attributed to oral-labial herpes in a family member
 3. Educate re: dz, transmission, potential neonatal effects, hand-washing
 4. If oral lesions are present at/after delivery (regardless if this is a primary or recurrent outbreak) inform that Pediatrics will likely recommend patient to wear disposable mask when handling baby. This recommendation comes from Pediatrics Redbook (a pediatric infectious disease handbook)
- L. Treatment for first clinical episode
1. RX:
 - a. Acyclovir 400mg PO three times daily for 7-10 days
 - b. Valacyclovir 1g PO twice daily for 7-10 days
 - c. Famciclovir 250mg PO three times for 7-10 days
 2. Acetaminophen
 3. Sitz baths
 4. Topical lidocaine (use with caution, may cause local allergic reaction)
- M. Treatment for recurrent episode
1. RX:
 - a. Acyclovir 400mg PO three times daily for 5 days
 - b. Valacyclovir 1g PO once daily for 5 days or 500 mg twice daily for 5 days
 - c. Famciclovir 125 mg PO twice daily for 5 days
- N. Suppressive Therapy
1. RX: Acyclovir 400 mg PO three times daily
 2. In women with a first outbreak in pregnancy or recurrent infection in pregnancy, suppressive therapy has been shown to reduce:
 - a. Outbreaks (OR 0.25, 95% CI 0.15-0.40)
 - b. Cesareans (OR 0.30, 95% CI 0.13-0.67)
 - c. Asymptomatic shedding (OR 0.09, 95% CI 0.02-0.39)
 3. There is no data regarding suppression for women who have not had any episodes in pregnancy.
 4. CDC and ACOG recommend a regimen of twice daily Acyclovir. Up-to-date recommends a TID regimen, which is approved by ACOG. This recommendation is based upon the regimens used in clinical trials and that glomerular filtration rate in pregnant women is substantially elevated, leading to more rapid drug elimination. TID is what most OB providers at SFGH recommend
 5. NOTE on Acyclovir: Drug is safe in pregnancy, including the first trimester. Prolonged use has no demonstrable risk to the fetus. Acyclovir requires HSV to be replicating to be changed into active form
- O. L&D considerations
1. Anyone with history of HSV should be evaluated for active lesions or symptoms on presentation to the birth center, including speculum exam

2. C/S should be offered to anyone with an active lesion or history of HSV and vulvar pain or burning at the time of delivery
3. Lesions that have fully crusted over are considered healed and not active
4. C/S is not recommended for women with recurrent genital herpes and active non-genital lesions. The lesions should be covered with an occlusive dressing
5. Fetal scalp electrodes should be avoided, when possible

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Revised 6/2007, 8/2009

HIV Counseling and Testing

HIV Testing

A. Barriers to Testing Pregnant Women for HIV

1. No prenatal care
2. Client perceived as low risk by patient and by care provider

B. OPT-IN Testing

1. At ZSFG we have opt-in testing for all pregnant women. Patients are offered HIV testing at their intake visit. Verbal consent is adequate for testing. Providers are responsible for giving patient results and delineating disclosure in the LCR.

C. General Principles for HIV testing

1. Persons at high risk for HIV infection should be tested annually for HIV.
2. All women who are seeking treatment for an STI should be offered HIV testing.
3. All women who have new partners or prospective new partners should be encouraged to be tested for HIV.
4. Patient education materials are available for your use via LCR, as well as in the top drawer of the patient education cabinet.
5. People who have an acute infection may have a negative HIV during the “window period” (3 weeks – 3mo). However, the virus can be detected by RNA pooled testing. This is the time of highest infectivity.

D. General Principles Specific to Pregnant Women

1. All pregnant women should be tested for HIV.
2. HIV testing as a routine part of prenatal care.
3. The counseling process should be simple
4. In pregnancy, women who are at higher risk for HIV should be tested again in the third trimester.
5. Verbal consent is required for pregnant adults
6. Prevention counseling is not required for diagnostic testing.
7. Providers should address reasons for refusal of testing.
8. All women who have not received an HIV test will need testing and will be offered chemoprophylaxis in labor.

E. Important Basic Information for Counseling Pregnant Women

1. HIV is a virus that causes AIDS, which is treatable, not curable.
2. HIV is spread through unprotected sex, injection drug use, pregnancy and breastfeeding.
3. A woman may be at risk even though she has only one sex partner.
4. 25% of HIV infected women can pass it to their babies in labor, delivery or through breastfeeding
5. Drug therapies for HIV infected women can protect their babies from being infected with HIV and change the transmission rate to less than 2%.
6. Services are available to help women decrease their risk and to provide care for those infected.
7. Women who decline testing are denying themselves of care for themselves and their babies.
8. HIV testing is voluntary and confidential.

F. Laboratory HIV testing at SFGH

1. ZSFG uses rapid HIV testing initially for all patients. The rapid HIV test has a low positive predictive value for low risk populations (see table below). Therefore, positive rapid tests are considered “preliminary positive” until confirmatory testing is completed.

Positive Predictive Value of HIV Tests in Populations with Differing HIV Prevalence Example: Testing 1,000 Persons			
HIV Prevalence	True Positive (Number)	False Positive (Number)	Positive Predictive Value
10%	100	2	98%
5%	50	2	96%
2%	20	2	91%
1%	10	2	83%
0.5%	5	2	71%
0.2%	2	2	50%
0.1%	1	2	33%

Source: CDC.

2. ZSFG tests for acute infection to decrease transmission. All negative specimens will be tested for HIV RNA by pooled testing. Results will be available under microbiology and serology sections of the LCR.
3. If a patient tests positive for HIV RNA, the ordering clinician will be contacted. A repeat HIV test will be done with a quantitative viral load.
4. Questions about testing can be directed to Jeffrey Klausner or Barbara Haller or the HIV Consult service, pager # 443-4601

G. Information about Positive Results

1. All HIV positive pregnant women are transferred to the BAPAC service run by Deb Cohan MD
2. Disclosure of positive results needs to be documented in SFGH electronic medical record system (LCR).
3. All positive individuals who have not received their HIV test results are followed up by the San Francisco City Clinic. www.dph.sf.ca.us/sfcityclinic.
4. All newly diagnosed HIV+ in-patients are seen by the PHAST team of the Positive Health Program at SFGH, Building 80, pager # 443-3892. www.php.ucsf.edu.
5. HIV Partner Counseling and Referral Services (PCRS), assists in notifying an HIV+ client's sexual or needle sharing partners about possible HIV exposure. They also provide confidential HIV counseling and testing to clients exposed to HIV. (415) 554-9085.
6. The San Francisco AIDS Foundation also offers a range of information on policies and issues at a local, state and federal level. www.sfaf.org/aboutsfaf.
7. As of April 17, 2006, California law requires named reporting for HIV-positive results.
8. Questions about HIV testing and/or management of positive individuals can be directed to the National HIV Telephone Consultation Service at 1-800-933-3413, located here at SFGH. www.ucsf.edu/hivcntr.

H. More about HIV Prevention Counseling

I. Examples of open-ended questions to assess HIV risk

1. What things are you doing now that increases your risk to HIV?
2. What are you currently doing to protect yourself from HIV?
3. How often do you use drugs or alcohol?
4. How do you think drugs or alcohol increase your risk to HIV?

J. Examples of behaviors to reduce risk

1. Carry a condom next time you go out.

2. Put condoms on bedside table.
3. Stop seeing partner whom is seeing other person.
4. Break up with one person before you start seeing someone else.
5. Talk honestly about own HIV status and ask about his.
6. Avoid drugs or ETOH next time I'm out with my friends and I might have sex.
7. Kissing until we both have an HIV test.
8. Obtain clean works.
9. Contact drug treatment center.

K. Provider Resources

1. California HIV/AIDS laws and guidelines can be found at:
www.dhs.ca.gov/aids/Reports/aidslaws/pdf/2616HIVAIDSLaws2005.pdf
2. Other sources of information provided by that California Office of AIDS:
3. www.dhs.ca.gov/AIDS/HIVReporting/
4. www.dhs.ca.gov/AIDS/HIVReporting/pdf/FAQsHIVReporting20060328.pdf
5. Nationally, this service center has also compiled state laws and policies nationwide, which can be found at: www.ucsf.edu/hivcntr/PDFs/WEB2006State%20Laws.pdf.
6. For information on CDC recommendations and incorporating routine HIV testing into medical settings see: www.cdc.gov/hiv/topics/testing/healthcare/index.htm.

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HIV Resources

Anonymous Testing

An anonymous HIV test means that you do not identify yourself by name or locating information. You cannot be given proof of your test result. Most sites require an appointment for testing.

- Lyon Martin Clinic 565-7667
- Planned Parenthood 441-7858
- San Francisco Native American Health Clinic 621-8051

Confidential testing

Confidential HIV testing means that you identify yourself to the health care provider. The results can not be given out to anyone without written consent. You may obtain written proof of your results.

- City Clinic (in conjunction with STD screening) for sex workers 554-9620
- Glide Health Clinic 674-6140
drop in only
- Haight-Ashbury Free Medical Clinic 487-5632
M,T,W,Th 6-8pm; also Hep C testing on M,T,W appointment only
- Huckleberries Cole St Clinic 386-9398
appointment preferred for ages 12-24
- Northeast Medical Services 391-9686
- SFGH (patients only) 206-8971
- South of Market Health Center 626-8927
appointment only

Other Resources

- Central AIDS Project Helpline UCSF 502-8378
- AIDS Hotline 863-2437

Other options for anonymous testing in California can be found at www.aidshotline.org. or by calling the California AIDS Hotline at 1-800-367-AIDS.

Revised 06/2007

Hypertension in Pregnancy

Summary of Hypertension in Pregnancy: ACOG Executive Summary (summarized by C Belew, 2014)
Green Journal Nov 2013 Vol 122(5); 1122-1131

Preeclampsia

- New terminology: non-severe and severe (not “mild”)
- Preeclampsia still defined as BP > 140/90, twice, formerly was 6hr apart now is 4 hr apart, plus proteinuria, at > 20 weeks gestation
- Proteinuria:
 - 24h urine > 300 mg
 - spot PCR ≥ 0.3
 - dip 1+
- Can also be diagnosed in the absence of proteinuria if one of the following systemic signs also present:
 - Platelets < 100K
 - Cr > 1.1 or doubling of baseline value
 - AST/ALT 2x normal
 - Pulmonary edema
 - Cerebral or visual symptoms: all more the reason to document AP hx of Has
 - Any of these symptoms automatically make you severe
- Preeclampsia non-severe: clearly states that mag sulfate is NOT indicated
- Changed criteria for diagnosis of severe preeclampsia:
 - BPs of > 160/110 4 hours apart while ON BED REST
 - Any of the systemic signs noted above
 - Proteinuria of > 5g/24hr and IUGR are no longer diagnostic of severe preE
- For severe preE: mag should not be shut off intraoperatively if cesarean

Chronic HTN

- BP >140/90 prior to 20 weeks GA
- Rx if >160/105
- No recco for ANT unless IUGR, on meds or progressed to pre-e
- Growth sonos are recco (my experience is they like them at 32 and 36 weeks)
- Deliver at 38 weeks** [Statement actually says “Delivery before 38 weeks not recommended” which is slightly different than Deliver at 38 weeks]

Chronic HTN with superimposed preE

- Manage similar to preE, deliver at 37 wks if no severe features, 34 weeks if severe

Gestational HTN

- BP > 140/90 without proteinuria, onset after 20 weeks
- Mild GH has the same management as preE without severe features: deliver at 37 weeks. Formerly let it go until 40 weeks. This is a big culture change and may not happen in practice. Is based on one RCT (the HYPITAT trial)

Postpartum care

- BP recheck at 72 hours and at 7-10 days postpartum if woman had preE or GH
- If PP BP > 150/100 x 24 hr apart - RX meds
- If BP 160/110: treat within an hour

- If new onset pre-e postpartum with either HA/visual changes or severe range BP - magnesium sulfate x 24-48 hr
- Postpartum counseling should include: increased risk of CV disease two-fold, as high as 8-fold if preE <34 weeks
- If had preE at <37 weeks or recurrent preE - annual BP, lipids, FBS, take into consideration for use of estrogen methods in over 35 age group
- Avoid NSAIDS in women who are persistently hypertensive PP

Baby aspirin for prevention if:

- Prior preterm preE resulting in delivery at < 34 weeks OR hx of preE with more than one pregnancy
- The practice change is that aspirin is recommended for term cases if it happened in more than one pregnancy

Ensure adequate calcium intake in women with history of any kind of HTN (chronic, gest or pre-e). Normal intake 1200 mg a day is sufficient (3 servings of dairy for example). Additional supplementation is not necessary.

Current ZSFG HTN management, by condition

Urine testing for hypertensive disorders:

PCR $\geq$ 0.3: diagnostic for pre-eclampsia

PCR .15 – 0.3: follow up with a 24-hour urine for protein

For patients with PCR <.15 but strong clinical suspicion for pre-eclampsia: also do a 24-urine for protein

PCR is most predictive (100%) at values >0.7, and does not perform as well as a predictor of proteinuria for the midrange (.15-0.3).

Chronic Hypertension

At the discretion of the CNM, physician, and client, collaborative management of chronic hypertension may be undertaken with regular physician consultations

1. The client should be seen in the Midwifery Moderate Risk (Wednesday) clinic where physician consultation is readily available
2. The prenatal record should clearly reflect collaborative management
3. Management may include:
 - a. Urine testing for protein and creatinine
 - b. Serum CBC and creatinine
 - c. Increased frequency of visits
 - d. Baseline and interval ultrasounds to evaluate fetal growth
 - e. Antenatal testing
4. Clients with chronic hypertension are at increased risk of developing superimposed preeclampsia
5. Clients requiring anti-hypertensive medication will be transferred to medical management, with some exceptions (after consultation).

Gestational Hypertension and Preeclampsia/Eclampsia

General management of elevated BPs without proteinuria

1. All BPs should be taken with the patient sitting and relaxed, with the appropriate size BP cuff for the patient's size (length 1.5 times upper arm circumference) after at least 5-10 minutes of rest
2. Calcium supplementation of 1.5-2 grams per day has been shown to decrease risk of hypertensive disorders in pregnancy according to a recent Cochrane review. However, Ca+ supplementation should occur at the very beginning of pregnancy to be effective. Consider for patients with low Ca+ intake
3. Consider NST/AFI and kick counts if concern about elevated BPs
4. Consider labs: CBC with platelets, AST, ALT, creatinine, Protein-Creatinine Ratio (PCR), arrange for follow-up of results
5. Consider follow-up BP check in 1-2 days
6. Carefully review s/s preeclampsia with patient

Management of elevated BPs with unexplained proteinuria

1. Send patient to Birth Center for further evaluation. Notify on-call midwife and Birth Center triage nurse.

Spot urine protein-creatinine ratio

1. The literature is mixed on spot protein-creatinine ratio as a replacement for 24-hr urine collection for protein.(2,3,4). Using this method of protein testing is helpful for thresholds 130-150, but 150-300 has very poor sensitivity and specificity. Thresholds >300 have not been adequately tested (5).

PCR (prot/creat ratio)	Interpretation	Suggested action
<0.15	Negative	24 hr urine prn
0.150- 0.300	Indeterminate	24 hr urine
>0.300	Significant protein is present	Preeclampsia if hypertensive

2. The use of spot urine protein-creatinine ratio is helpful for some of the following reasons:
 - a. To determine whether it is OK to wait for a 24 hr urine (for ex: a term woman with hypertension)
 - b. If 24 hr urine not possible
 - c. Compliance is an issue
3. The LCR will report a number for the urine protein and the creatinine. You have to do the calculation: protein divided by the creatinine

Management of patients who have a diagnosis of pre-eclampsia

1. For patients who rule in for pre-eclampsia, consult OB chief or attending re: management plan.
2. Some preterm patients will be managed expectantly.
3. Patients with pre-eclampsia with severe features (or with any severe hypertensive disorder) will be transferred to the OB service for care.

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Revised 12/2007, 08/2009, 01/2018

Induction of Labor - Methods

Options for outpatient IOL methods

- A. Castor Oil for stimulation of labor has been demonstrated to increase the rate of spontaneous labor and decrease the cesarean section rate without increasing incidence of meconium or adversely impacting Apgar scores (Davis, 1984; Garry, 2000). Caution should be taken in a woman with a uterine scar.

Recommendations for how to use castor oil:

Take it early in the morning, ideally after a good night of sleep.

Stay very well hydrated throughout the day.

Expect mild to severe diarrhea with cramping to occur between 2-6 hours after ingestion of castor oil.

Take 2-4 ounces of castor oil, may repeat one hour later.

1. Methods of making it palatable for ingestion:

- a. Scramble it into 2-3 eggs.
- b. Put in blender with 2 ounces frozen orange juice concentrate and a little ice.
- c. Put in blender with Dr. Pepper or Root Beer and a little ice.
- d. Place in a glass jar with 4 ounces root beer, shake vigorously and guzzle immediately.
- e. Place in a glass jar with 8 ounces of orange juice and 1 tsp baking soda –
- f. Shake or stir vigorously – this makes it fizzy, like a soda

- B. Breast stimulation for cervical ripening and induction of labor: stimulation of the nipples, either manually or with a breast pump, may ripen the cervix and increase the chance of being in labor within 72 hours. During breast stimulation the woman should monitor herself for uterine hyperstimulation and discontinue nipple stimulation if this occurs. Stimulation with an electric breast pump: use pump on one breast for 15 minutes, then a 15 minute rest period, then the other breast for 15 minutes, followed by a 15 minute rest, and so on. Manual nipple stimulation: Gentle nipple massage using vegetable oil, for one hour three times a day. Massage one nipple at a time. The Cochrane Database review states “until safety issues have been fully evaluated (breast stimulation) should not be considered for use in a high risk population”

- C. Outpatient foley catheter for cervical ripening: what follows is the outpatient portion of the Outpatient Foley Placement Workflow. Use this to guide decision-making. Patient handouts about the outpatient foley can be found on the OB GoogleDrive. When scheduling the IOL with the charge RN and when alerting the on-call CNM about the IOL, please be sure to mention that the patient will have an outpatient foley. As with any IOL, complete the IOL checklist and for WHC patients, have checklist scanned into the chart.

Outpatient Foley Placement Workflow: clinic provider

The clinic provider is responsible for counseling about the option of outpatient Foley bulb for IOL and scheduling the patient for the procedure.

Provider should:

1. Discuss the outpatient Foley option with the patient and offer her the Foley educational handout
 - a. Candidates for outpatient management may include:
 - i. Medical indications:
 1. Gestational diabetes (well controlled)
 2. Chronic hypertension (well controlled)
 3. Gestational hypertension (well controlled)

- ii. Obstetric Indications:
 - 1. Postdates, prolonged gestation
 - 2. Twin gestation
 - 3. Fetal demise
 - b. Absolute contraindications for **outpatient management** of Foley catheter (in addition to the other absolute contraindications above):
 - i. **Conditions that require continuous fetal monitoring such as:**
 - 1. Non-reactive fetal heart rate tracing
 - 2. BPP ≤ 6
 - 3. Unstable medical or obstetric conditions, such as preeclampsia with severe features, or HELLP syndrome
 - 4. Known or suspected placental abruption or active vaginal bleeding
 - 5. Preterm (<37 weeks)
 - 6. Fetal growth restriction (FGR) +/- abnormal umbilical Dopplers
 - 7. Oligohydramnios
 - 8. Polyhydramnios
 - 9. Fetal anomalies requiring immediate and aggressive resuscitation
 - c. Relative contraindications for **outpatient management** of Foley catheter:
 - i. Patient has no phone access or transportation
 - ii. Patient who has demonstrated difficulty attending appointments or following through with medical advice
 - iii. Patient unable to verbalize understanding of care plan or instructions for self-care
 - iv. Uterine scar (e.g., previous cesarean delivery or myomectomy)
 - v. Intrahepatic cholestasis of pregnancy
- 2. Complete the IOL checklist, then:
 - a. For patients in eCW: have IOL checklist scanned into eCW
 - b. For patients not in eCW: fax IOL checklist to 1) the Family Birth Center (628) 206-9201 and 2) the ANTC (415) 206-3456
- 3. Call the Birth Center Charge RN at (628) 206-8725 to schedule the labor induction for the intended gestational age
- 4. Call the ANTC at (415) 206-8705 to schedule a Foley placement for the day prior to the labor induction date (38w6d is okay, for example); state name/MRN clearly. If the date is a weekend or holiday or the ANTC has no capacity on a weekday, the visit should be scheduled for the Birth Center.
- 5. Give patient a handout with the appointment timing and directions to the ANTC and/or Birth Center.

Note: all patient handouts and forms can be found both on the Perinatal Website and in the eCW Women's Health Center googledoc. In googledoc, all forms are found under "IOL."

The initial ANTC appointment ideally should be made **Mon-Fri at 8:30am** if this works for the patient, with the post-procedure NST appointment made about 2 hours later. Patients should be aware that if the appointment is made for the Birth Center Triage, they may need to wait.

Revised 01/2018

IUGR (Intrauterine Growth Restriction)

A. Definitions

IUGR

Sonographic evidence of EFW less than the 10th %tile for gestational age. (However, the 5th-10th percentile range is associated with constitutionally small vs. real IUGR, so some people choose to use less than the 5th percentile as their definition. (Manning, 1995))

Symmetric IUGR

Symmetric FGR (fetal growth restriction), which comprises 20 to 30 percent of growth restricted fetuses, refers to a growth pattern in which all fetal organs are decreased proportionally due to impairment of early fetal cellular hyperplasia. (Up to Date)

Asymmetric IUGR

Asymmetric FGR is characterized by a relatively greater decrease in abdominal size (eg, liver volume and subcutaneous fat tissue) than head circumference and is found in the remaining 70 to 80 percent of the FGR population. Asymmetric fetal growth is thought to result from the capacity of the fetus to adapt to a hostile environment by redistributing blood flow in favor of vital organs (eg, brain, heart, placenta) at the expense of nonvital fetal organs (eg, abdominal viscera, lungs, skin, kidneys) (Up to Date).

B. Implications in Pregnancy

1. Higher risk of IUFD, infant mortality and morbidity (polycythemia, hypoglycemia, hypothermia, apnea, low apgar scores, umbilical artery ph <7.0, and seizures)
2. Abnormal FHT patterns in labor
3. Oligohydramnios
4. Increased C/S rate

C. Risk factors

1. Previous Hx IUGR, SGA
2. Low pre-pregnancy weight
3. Hemoglobinopathies
4. Asthma
5. Substance abuse including smoking
6. Maternal infections (TORCH)
7. Fetal infections
8. Hx stillborn
9. Maternal chronic disease
10. Poor prenatal care

D. Clinical findings

1. Fundal height less than expected in the third trimester (however, sensitivity is 30-50%) (6,7,8)
2. Poor maternal weight gain
3. Low BMI
4. Estimated fetal weight less than expected
5. Severe anemia
6. Elevated HCG on triple marker screen
7. Maternal hypertension, PIH
8. Pre-eclampsia
9. Placental cord abnormalities

10. Fetal chromosomal abnormalities

E. Objective Information needed for Assessment

1. Abdominal Exam: Fundal height measurement reveals a discrepancy of ≥ 3 cm compared to gestational age taking into consideration causes for size-dates discrepancy (Fundal height, Fetal lie, Engagement of presenting part into pelvis, IUFD, oligohydramnios)
2. Ultrasound- serial US exams at least 3 weeks apart to evaluate interval growth (Abdominal circumference with BPD or femur length is most helpful in diagnosing IUGR). Make sure US calculates a percentile. This often does not happen and you have to call them to do this. See table for general percentile calculations if this is not possible.
3. Doppler flow studies (these are done if growth by US is <10th percentile)

Smoothed percentiles of birth weight (g) by gestational age: U.S. 1991 single live births

Gestational age, weeks	5th percentile	10th percentile	50th percentile	90th percentile
24	435	498	674	977
25	480	558	779	1138
26	529	625	899	1362
27	591	702	1035	1635
28	670	798	1196	1977
29	772	925	1394	2361
30	910	1085	1637	2710
31	1088	1278	1918	2986
32	1294	1495	2203	3200
33	1513	1725	2458	3370
34	1735	1950	2667	3502
35	1950	2159	2831	3596
36	2156	2354	2974	3668
37	2357	2541	3117	3755
38	2543	2714	3263	3867
39	2685	2852	3400	3980
40	2761	2929	3495	4060
41	2777	2948	3527	4094
42	2764	2935	3522	4098

Adapted from: Alexander, et al. United States National Reference for Fetal Growth. In Obstet Gynecol 1996; 87:163-168.

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Tenth percentile of birth weight (g) for gestational age by gender: United States, 1991, single live births to resident mothers

Gestational age, weeks	Male	Female
20	270	256
21	328	310
22	388	368
23	446	426
24	504	480
25	570	535
26	644	592
27	728	662
28	828	760
29	956	889
30	1117	1047
31	1308	1234
32	1521	1447
33	1751	1675
34	1985	1901
35	2205	2109
36	2407	2300
37	2596	2484
38	2769	2657
39	2908	2796
40	2986	2872
41	3007	2891
42	2998	2884
43	2977	2868
44	2963	2853

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F. Plan

Diagnostic

1. Review dating criteria to most accurately assess GA. Early sonogram (less than 12 weeks) for adequate dating is optimal.
2. Serial US exams to monitor fetal growth. At least one ultrasound in the third trimester (28-32 weeks) is usually recommended. If size is equal to dates and normal interval growth is documented in an otherwise low-risk patient, an additional sonogram is often not needed. Sonographic estimation of fetal weight is the best method for identifying fetuses whose birth weight is likely to be below the 10th percentile for gestational age. (Up to Date)
3. Abnormal HC/AC or FL/AC ratios are particularly useful in the diagnosis of asymmetric vs symmetric fetal growth.
4. Assess for signs and sxs of pre-eclampsia.
5. Monitor weight gain closely
6. Do TORCH labs if earlier in pregnancy

Therapeutic

1. Encourage high protein diet
2. Encourage smoking cessation

Education

1. Kick counts
2. Nutritional counseling

Follow up

1. Consult with attending physician and decide on a plan of care. Care should be co-managed.
2. Should be seen more frequently in the office (weekly)
3. Antenatal testing 2X week from time of documented IUGR in current pregnancy. Consider ANT before documentation if ultrasound is delayed.
4. Induction at term (37 weeks)
5. Doppler flow studies weekly (only if < 10th percentile) until 37 weeks and induction. Consult with any abnormal doppler studies.
6. Consider social work to address possible psychosocial stressors, presence of eating disorders, insufficient food at home, etc.

References

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2. Baschatt AA, Gembruch U, Reiss I et al. (2000) Relationship between arterial and venous Doppler and perinatal outcome in fetal growth restriction. *Ultrasound Obstet Gynecol* 16, 407-413
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Revised 8/2003, 6/2008, 6/2009

IUGR History

A. Definition

History of baby weighing less than the 10th %tile for gestational age at birth.

B. Implications in Pregnancy

Possible recurrence depending on root cause.

C. Plan

1. Get a good history of events surrounding pregnancy and birth
 - a. Severe anemia
 - b. Elevated HCG on triple marker screen
 - c. Maternal hypertension
 - d. Pre-eclampsia
 - e. Hemoglobinopathies
 - f. Asthma
 - g. Substance abuse including smoking
 - h. Poor prenatal care
 - i. Maternal infections
 - j. Fetal infections
 - k. Placental cord abnormalities
 - l. Fetal chromosomal abnormalities
 - m. Hx prev stillborn or SGA infant
 - n. Low weight gain
 - o. Several other medical conditions that are risk factors that we would not see in our caseload (IDDM, Renal disease, Autoimmune disease, congenital heart condition,)
2. Consider high- risk consult after WU appt
 - a. MD service may elect aspirin therapy
3. Early dating sono (prior to 12 weeks) as permits
4. Serial sonos for growth Most patients will require at least one sonogram for growth in the third trimester (26-32 weeks depending on prior OB hx and underlying risk factors and current pregnancy FH)
5. More frequent prenatal visits. A reduced prenatal visit schedule is not appropriate.
6. Highly encourage nutrition visits
7. Closely monitor fetal growth and weight gain
8. Encourage kick counts at 32 weeks.
9. Consider antenatal testing at 32 weeks.
10. Calcium supplementation of 1.5-2 grams per day if IUGR was related to HTN. Ca supplementation has been shown to decrease risk of hypertensive disorders in pregnancy according to a Cochrane review. However, Ca+ supplementation should occur at the very beginning of pregnancy to be effective. (3)

References

1. ACOG: Intrauterine growth restriction (Practice Bulletin 12), Washington, DC, 2000, American College of Obstetricians and Gynecologists.
2. Walsh, Linda V, Midwifery: Community-Based Care During the Childbearing Year, Philadelphia, WB Saunders, 2001, pp. 441-2.
3. Dietary calcium supplementation for prevention of pre-eclampsia and related problems: a systematic review and commentary. BJOG. 2007 Aug;114(8):933-43. Epub 2007 Jun 12.

Adopted: June 2008, Revised 12/2008

IUFD PP Visit

- A. Subjective Data
 - 1. Assess sleep patterns, eating, ability to take care of self, support system, ability to grieve normally, coping mechanisms
 - 2. Assess for symptoms of breast engorgement
 - B. Objective Data
 - 1. Breast exam
 - C. Plan
- Therapeutic:
- 1. Be available to discuss the death of the infant and answer questions
 - 2. Discuss different patterns of grieving between mother and father (Walsh, 2001).
 - 3. Refer to support group for (info in file cabinet in the midwife office)
 - 4. Encourage waiting 1 year before attempting another pregnancy to allow for full progression of grieving process (Walsh, 2001).
- D. Education
 - 1. Disc Breast Care
 - 2. Contraception
 - E. Follow up
 - 1. Lab results (most often still pending until a few weeks PP)
 - a. TORCH labs, ANA Titer, Anti-cardiolipin antibody, Lupus anti-coagulant
 - b. Possible Genetic thrombophilia labs (Factor V Leiden, methyltetrahydrofolate reductase C677T mutation, Prothrombin G2021A mutation, Antithrombin III, Protein C and S levels). Some of these labs may need special permission from the lab resident to run (if not done on 6C).
 - c. Follow up on chromosomal (cytogenetic) analysis at UCSF : Randy 353-4846
 - d. Autopsy findings prn
 - 2. Consult MD service re: labs and/or management for future pregnancies if any positive testing
 - 3. Arrange for meeting with pediatrician, obstetrician and family to go over all lab results, autopsy findings and answer any questions they may have about fetal death.
 - 4. Arrange for PHN visit
 - 5. Consider a 4 month visit to assess for signs of profound grief requiring mental health intervention (Walsh, 2001).

References

- 1. Walsh, Linda V. Community Based Care During the Childbearing Year. pp. 481-485, Philadelphia, 2001, W.B. Sanders Co.

Revised Dec 2007, 6/2009

IUFD History

A. Definition

History of having given birth to a fetus that was at least 500gm that did not survive.

B. Pregnancy Implications

Rates of recurrent stillbirth range from 0-8% depending on the cause of death. Infectious causes are unlikely to recur. Hypertension treated in some studies show a reduction in risk of recurrence. Placental abruption has a recurrence rate up to 10%.

C. Plan

Diagnostic

1. Get a good history and write a note that includes information about the events of the IUFD (the GA of fetus when it died, the reason if one was found, indicators of infection, autopsy findings, abnormalities in placenta or cord).
2. Get a good history regarding risk factors (hypertension, diabetes, antiphospholipid syndrome, drug use).
3. Refer for genetic counseling if possible genetic cause
 - a. Consider chorionic villi sampling or early amniocentesis if abnormal karyotype was thought to be the cause
4. Level-2 sonogram should be done.
5. Testing for antiphospholipid antibodies if the loss occurred in the 2nd trimester.

Therapeutic

1. Address possible feelings of anxiety or depression.
2. A local resource (including meetings in SF) for English-speakers is through HAND; see their website for info about meetings, at <http://handsupport.org/>

Education

1. Discuss kick counts at 32 weeks.

Follow up

1. Antenatal testing should be done weekly from 32 weeks until delivery.
2. Consult with Attending physician re: plan of care/ need for induction
3. Social work referral to further explore possible feelings of anxiety or depression surrounding previous loss.

References

1. Walsh, Linda Midwifery Community Based Care During the Childbearing Year, pp.481-485, Philadelphia, 2001, WB Saunders.

Low Lying Placenta

A. Definition

Implantation of the placenta in the lower uterine segment, but does not reach the cervical os.

B. Clinical Implications in Pregnancy

1. Placental implantation less than 2 cm from the cervical os is associated with a high rate of CS due to vaginal bleeding, although some patients with low-lying placentas will go on and have uncomplicated vaginal deliveries
2. 90% of low lying placentas identified in early pregnancy will be resolved by the third trimester. Vasa previa may still be a problem even if the placenta is no longer low-lying (this can be readily seen on ultrasound)
3. Low-lying placenta is also associated with an increased risk of postpartum hemorrhage.
4. Although the evidence is not strong, it is thought that low lying placenta could also cause preterm labor and preterm birth due to bleeding at the placental implantation site in the antepartum period.

C. Signs and symptoms

1. Vaginal bleeding
2. May be asymptomatic.

D. Diagnostic Criteria

1. Placenta implanted in within 2 cm from the cervical os by sonographic examination. Diagnosis is best done transvaginal sonogram

E. Management

2. Get follow-up sonographic evaluation to rule out placenta previa, low-lying placenta and vasa previa. This is done at 32 weeks and requires transvaginal ultrasound in addition to standard transabdominal views
 - a. Make sure ultrasound request states "transvaginal ultrasound-r/o vasa previa"
 - b. Let patient know she will be having a transvaginal ultrasound
3. Patients with a low-lying placenta or placenta previa at 32 weeks will need another sonogram at 36 weeks (in a small proportion of patients the low lying placenta will be resolved at 36 weeks)
4. Patients with the placental edge less than 2 cm from the cervical os at 32 weeks should be seen in moderate risk clinic at 34-35 weeks so a plan of care can be made. The options are a trial of labor or a planned CS.
5. If patient will be having a trial of labor, discuss risks of CS for vaginal bleeding and PP hemorrhage, and aspects of intrapartum management when in labor (large bore IV, type and crossmatch 2units, anesthesia consult, active management of the third stage)
6. Encourage iron-rich foods to maximize H/H.

References

1. Ogueh, L. Morin a, R.H. Usher a and A. Benjamin. Obstetric implications of low-lying placentas diagnosed in the second trimester Volume 83, Issue 1, Pages 11-17 (October 2003).
2. Y. Oyelese , JC Smulian. Placenta Previa, Placenta Accreta and vasa Previa Obstet Gynecol 2006; 107:927-41.

Revised 6/2007, 12/2008

Mastitis - Maternal Complications of Breastfeeding

Engorgement

Definition: Excessive fullness in the breast

Engorgement involves three elements:

1. Congestion and increased vascularity (physiologic response that does not depend on suckling)
2. Accumulation of milk
3. Edema secondary to swelling and obstruction of drainage of the lymphatic system by vascular increases and fullness of the alveoli

Clinical Presentation

1. Breasts will feel full, hard, and tender
2. There may be a low grade fever (no higher than 38.5 degrees Celsius)
3. The breast may be hot, with taught, shiny skin
4. The areola may be engorged, obliterating the nipple and making it difficult for the baby to latch
5. Nipple may be the only thing the baby can latch onto, leading to cracked painful nipples
6. The mother feels well, there are NO constitutional symptoms

Treatment

1. "The best treatment of engorgement is prevention"
2. Teach proper latch
3. Frequent breastfeeding with complete emptying
4. Areolar softening:
 - a. Mother places forefinger and middle finger on either side of nipple (holding it like a cigarette).
 - b. Pushes directly back toward chest wall. Should not stretch or squeeze. Hold for 1-3 minutes.
 - c. Rotate and repeat until areola is pliable.
5. Warm compresses or soaks before feeding or expressing
6. Cool compresses between feeds
7. May need to hand express milk for comfort
8. Cabbage leaves to the breast (some like it, not been shown to be effective in clinical trials)
9. Ibuprofen (preferable) to decrease pain and swelling
10. Acetaminophen to decrease pain
11. Warm compress of parsley
12. Make lactation consultant referral

Plugged or Clogged Ducts

Definition: localized areas of milk stasis with distension of mammary tissue

Clinical Presentation

1. A hard lump or wedge-shaped area of engorgement in the vicinity of the plug may feel tender, may have erythema overlying lump
2. Occasionally mom will only notice localized tenderness or pain, without an obvious lump or area of engorgement.
3. The location of the plug may shift
4. A plugged duct will typically feel more painful before a feeding and less tender afterward, and the plugged area will usually feel less lumpy or smaller after nursing. Nursing on the affected side may be painful, particularly at letdown
5. May have particulate matter in milk
6. May be caused by tight bra or bra underwires
7. There is no fever, and there are no constitutional symptoms

Treatment

1. Frequent feeding starting with the affected side helps drain the breast and remove the blockage

2. Hand massage of the blocked area
3. Moist heat may help resolve the plug
4. If no resolution within 72 hours, need further evaluation
5. Plugged ducts increase the risk of mastitis, so patients should be carefully counseled re the signs and symptoms of mastitis
6. Lecithin seems to help some women who have repeated plugged ducts, by decreasing the viscosity of the milk. It can be found at Rainbow Grocery and other natural food stores. Dose per Jack Newman is 1200mg four times a day.
7. Lactation consultant referral

Mastitis

Definition: acute inflammation of the interlobular connective tissue within the mammary gland

Predisposing Factors

1. Cracked or damaged nipples
2. Poor feeding, scheduled frequency or duration of feeding, or change in feeding frequency
3. Poor latch leading to inefficient milk removal
4. Engorgement/ oversupply of milk and /or plugged ducts and milk stasis
5. Maternal stress and fatigue
6. Previous mastitis

Clinical Presentation

1. Incidence 2-10 percent of lactating women, maybe higher
2. Hard, red, tender, possibly swollen area of one breast associated with fever >38.5, and often with systemic myalgia, chills, malaise, and flu-like symptoms
3. Most common 2nd or 3rd week postpartum
4. Portal of entry may be a cracked nipple

Treatment

1. Effective milk removal-important to continue nursing on affected breast and address problems with latch
2. Rest and fluids
3. Measures to relieve any engorgement or plugged ducts
4. Anti-inflammatory agents like ibuprofen for pain control
5. Based on review of breast milk cultures at ZSFG, most mastitis without abscess are due to methicillin-susceptible staph aureus (MSSA) not MRSA; however, Clindamycin is still the drug of choice because dicloxacillin and cephalexin will not cover MRSA and TMP-SMX will not cover strep.
6. Of note, some MRSA is resistant to clindamycin
7. First –line antibiotic—Clindamycin 300 mg po TID x 10-14 days (lactation category L2). Note: clindamycin puts the mother at slightly higher risk for clostridium difficile so please counsel the mother accordingly, consider probiotic support for gut health.
8. Other antibiotic options:
 - a. If clindamycin allergic: TMP-SMX (Trimethoprim/sulfamethoxazole) 1 po BID x 10days (L3), send breastmilk culture
 - b. If history of MRSA infection: TMP-SMX 1 po BID x 10 days
 - c. If infection does not respond to the initial treatment (with clindamycin, cephalexin or dicloxacillin) treat with: TMP-SMX 1 po BID x 10 days, send breastmilk culture
9. Lactation categories:
 - a. L1: Safest: controlled studies fail to demonstrate risk to infant

- b. L2: Safer: studies in a limited number of breastfeeding women without increase in adverse effect in the infant
 - c. L3: Moderately Safe: no controlled studies in breastfeeding women however the risk of untoward effects to infant is possible. Give drug if potential benefit justifies potential risk to infant.
10. Carefully document physical exam especially size and location of induration. This will aid in follow-up
 11. If there is any suspicion of breast abscess (see description below), physician consult and possibly breast ultrasound is warranted

Follow-up

1. Patients with mastitis need to be seen 36-48 hours after starting antibiotics
2. Follow up on temperature, resolution of malaise, and nursing
3. Physical exam to check for resolution of any erythema and/or induration and to rule out abscess formation. Consider MD consult and potential use of ultrasound to rule out abscess formation, if in doubt
4. If breast milk culture was obtained, check on results and sensitivities
5. If symptoms and physical exam are not well on the way to resolution, physician consult and possibly breast ultrasound is indicated
6. Lactation consultant referral

Breast Abscess

Definition: a localized collection of pus, formed by disintegrated cells and surrounded by an inflamed area. The walled off features of an abscess make antibiotics ineffective in treatment.

Clinical presentation

1. About 5-10% of patients with mastitis will go on to develop breast abscesses
2. Symptoms may be similar to mastitis, although sometimes symptoms are less severe
3. The affected area is often erythematous and very painful
4. There may be a palpable, fluctuant mass
5. Suspect breast abscess if a patient with mastitis is not responding to treatment

Management

1. Patient with breast abscesses will be transferred to the physicians for inpatient antibiotics
2. Breast abscesses require drainage either via needle aspiration (usually under ultrasound guidance in Interventional Radiology) or surgically
3. Midwives will follow inpatients with social visits and to provide lactation support

Fungal Infections

Definition: fungus (most often candida albicans) in the nipple and ductal breast tissue, causing symptoms

Clinical Presentation

1. Often predisposing factors
 - a. Infant with thrush (mouth or candidal diaper rash)
 - b. Nipple damage
 - c. Antibiotic use in mother or infant
 - d. Maternal vaginal candidiasis
 - e. Diabetes
 - f. Immunosuppression
2. Most frequent symptom is new onset breast and/or nipple pain, often described as intense burning, and may be described as stabbing pain radiating from the nipple through the breast
3. Clinical diagnosis: Most sensitive symptom is characteristic nipple pain. Most sensitive signs are red, shiny, or flaky appearance of skin of nipple and areola

Treatment

1. Both mother and baby need to be treated simultaneously, even if baby does not have symptomatic thrush
2. Nystatin applied to baby's mouth with cotton swab (apply from a medicine cup so the swab does not go into the bottle of nystatin after being in the baby's mouth). Nystatin oral suspension 100,000 u per cc. 60 cc. 2cc swabbed in infant's mouth QID x10 days
3. After nursing, rinse nipples with solution of 1/3 cup plain tepid water and 1 teaspoon vinegar and air dry. Can rinse nipples after every nursing. Apply antifungal cream like Clotrimazole 1% QID after rinsing and air drying nipples.
4. Do both for 10-14 days

OR

5. 0.5% (Newman says 1%) gentian violet—swab infant's mouth once daily—may also swab mother's nipples once daily. Gentian violet is—violet—and will stain infant's mouth and mother's nipples and possibly her clothes. Use for three days (Newman says 4-7 days.)

OR

6. Fluconazole 400 mg po once then 100 mg po BID x 10 days (this is empiric treatment regimen prescribed by Dr. Jack Newman--www.drjacknewman.com)

ALSO

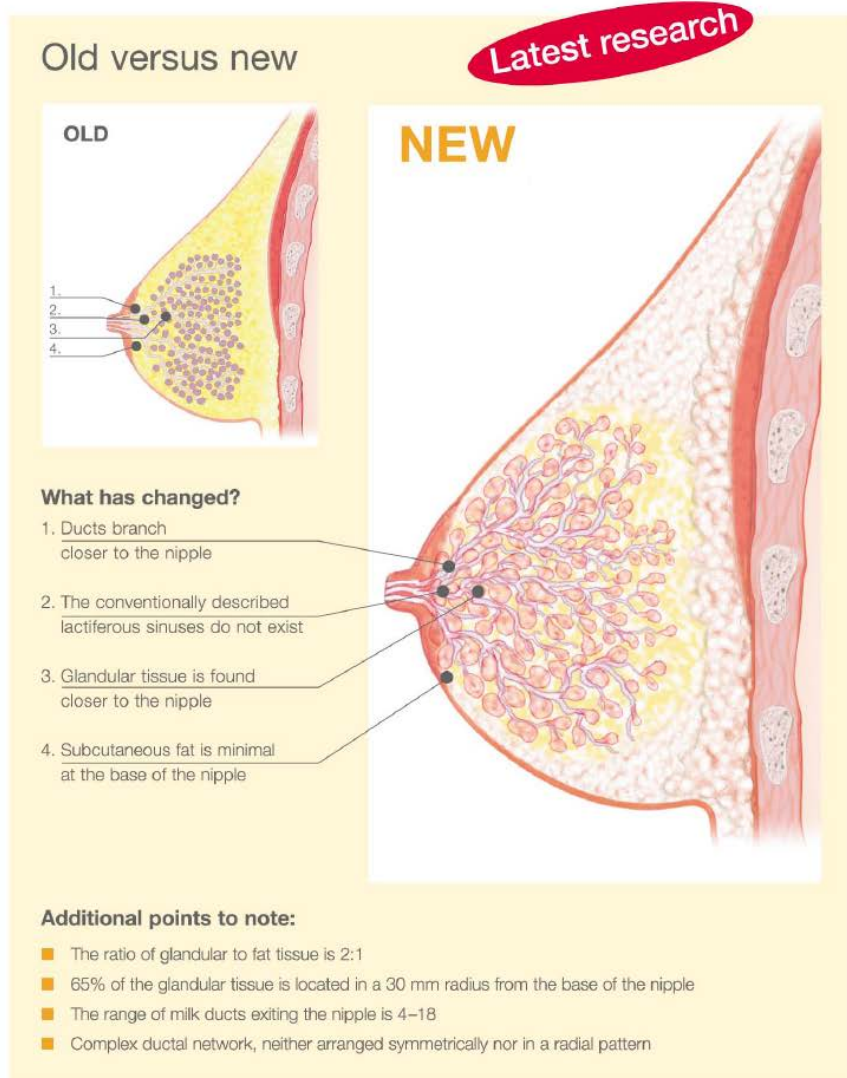
7. Anything that comes into contact with mother's breast or baby's mouth (i.e bra, breast pads, breast pump, pacifier, bottle nipples, teethingers) needs to be boiled for 20 minutes daily in order to kill yeast (for one week)
8. Bras, other clothes and bedding in contact with the milk should be washed, then dried in the sun or in a hot dryer.
9. Do not freeze mother's milk while treating a fungal infection, as freezing will not kill the yeast, and the baby can be recolonized
10. Mother can increase acidophilus, garlic, zinc, and B vitamins in her diet
11. Decrease sugar and non-complex carbohydrates

References

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4. www.drjacknewman.com
5. Lauwers, J. and Shinskie, D. (2000). Counseling the Nursing Mother. (pp 260-270). Sudbury, MA: Jones and Bartlett,
6. Lawrence, R. and Lawrence, R. (1999). Breastfeeding: a guide for the medical profession (5th edition). (pp 273-284). St. Louis: Mosby.
7. Up To Date: Common Problems of breastfeeding in the postpartum period. www.uptodate.com
8. Varney, H. (2004). Varney's midwifery (4th ed.). (pp.1079-1080). Sudbury, MA: Jones and Bartlett.

Revised 01/2018

Anatomy of the Lactating Breast



THE UNIVERSITY OF
WESTERN AUSTRALIA



These diagrams are based on research conducted at The University of Western Australia. • Presented by: Ramsay DT, Kent JC, Hartmann RA and Hartmann PE (2005). • Anatomy of the lactating human breast redefined with ultrasound imaging. • Journal of Anatomy, 206:525-534. • Copyright ©Medela AG 2006. 1907745 A 0806

OB Package Contract

Below is the (newly revised) contract our OB Package patients sign. Other covered services are prenatal care and any labs/tests/procedures related to the pregnancy. If you or the patient have questions about what is and is not covered please refer patient to the eligibility worker in clinic.



SAN FRANCISCO HEALTH NETWORK MATERNITY PACKAGE PLAN

Thank you for choosing the San Francisco Health Network (SFHN) as your maternity care provider.

The San Francisco Health Network offers an OB Maternity Package Plan with a payment contract to cover specified maternity services for women.

Maternity Package Plans

Coverage includes all outpatient prenatal care, labor and delivery and nursery care at Zuckerberg San Francisco General Hospital & Trauma Center as specified below. **Coverage also includes one post-partum visit & tubal ligation at the time of delivery, with prior written consent from the patient.**

Vaginal Delivery Coverage:

Vaginal Delivery – The Contract covers 1 Inpatient stay, with 2 Inpatient days, starting on the day of delivery. The contract also includes a maximum of 3 days labor, prior to delivery within the same Inpatient stay.
Total Fee: \$ 5,500

Initials: _____

Cesarean Section Coverage:

C- Section Delivery- The Contract covers 1 Inpatient stay, with 3 Inpatient days, starting on the day of delivery. The contract also includes a maximum of 3 days labor, prior to delivery within the same Inpatient stay.
Total Fee: \$ 6,500

Initials: _____

SAN FRANCISCO HEALTH NETWORK MATERNITY PACKAGE

FINANCIAL RESPONSIBILITIES AND AGREEMENTS PRENATAL CARE AND LABOR AND DELIVERY PACKAGE

1. I agree to the terms and conditions of the Maternity Package contract.

Price for Prenatal Care and Normal Vaginal Delivery \$5,500.00

Price for Prenatal Care and Cesarean Section Delivery \$6,500.00

I agree to make an initial deposit of \$1,500 at the time of enrollment. I further agree to pay the full amount one month prior to my estimated delivery date.

Payments may be made between the hours of 8 A.M. and 8:30 P.M. Monday through Friday at the Cashiers Office, Room H1402 on the first floor of Building 25. Checks may also be mailed to ZSFG, P.O. Box 44824, San Francisco, CA 94144-4821. Include your account number

_____ on the check and make a notation "Maternity Package".

2. I agree, to apply for California Children Services for my newborn if requested by hospital personnel.
3. I agree to apply for Medi-Cal, through the Child Health and Disability Prevention Program (CHDP) for my newborns' ongoing care at San Francisco Health Network, if eligible.
4. I agree that if my care or the care of my newborn requires services, not-covered by this contract, I will accept full financial responsibility for all charges according to the San Francisco Health Network billing policies.
5. I understand and agree in the unlikely event the pregnancy is terminated or I choose to transfer my care to another facility or do not deliver at Zuckerberg San Francisco General Hospital (ZSFG) for any reason; I agree to pay the full cost of services associated with this contract, up to the total charge of \$2,000.
6. I agree that the OB Package contract only covers specific pregnancy related services provided at ZSFG.
7. I declare that I have no insurance coverage for maternity care.

NAME OF PATIENT: _____

E.D.D.: _____

SIGNATURE: _____

DATE: _____

M.R.N: _____

Account #: _____

E.W. SIGNATURE: _____

DATE: _____

Obesity Guidelines

For women with a BMI >40 there are the following general recommendations:

1. Nutrition counseling, weight gain guidance, exercise plan
2. Dating u/s
3. Early gestational/DM screening
4. Ultrasound at 20-21 weeks (anatomy scan) since visualization difficult prior to this GA
5. Fetal growth u/s at 30-32 wks, then 36-37 wks
6. ANT q wk starting at 36 weeks
7. Consider IOL at 39-40 weeks with favorable cervix
8. If prior c/s, HROB consult to address R/B/A, at around 32-34 wks GA
9. Labor management must consider issues r/t to transfer from room to OR, decision to incision time, time to get baby out, etc.
10. Counseling of obese women can include discussion of increased risks of: perinatal mortality, c/s, anesthesia complications, OB trauma, SIDS, and longterm health issues such as DM, HTN, life expectancy
11. Make sure these patients have primary care, make referral postpartum prn – will need ongoing support, possible referral for bariatric surgery
12. Good FP counseling/advice

For women with a BMI >40 please submit an e-referral to HROB as an e-referral consultation. In your referral include your plan for management of the patient. For higher risk patients (eg. very high BMI, other risk factors) being seen in HROB may be appropriate.

Revised 01/2018

Pap Smear/ Cervical Cancer Screening
Guidelines for Screening for Cervical Cancer and its Precursors, 2008
Zuckerberg San Francisco General Hospital & Trauma Center

These are guidelines for use of cervical cytology in asymptomatic women as a screening tool for cervical cancer and its precursors. Tests performed in symptomatic women should be evaluated in clinical context.

Age to begin screening	Approximately 3 years after the onset of vaginal intercourse No later than age 21 years; screening is discouraged in known virgins.
Interval of screening	Annually with either conventional or liquid-based cytology.§ At or after age 30, women with 3+ prior consecutive, normal tests may be screened every 2-3 years. Annual screening is recommended in immunocompromised women (e.g., HIV infected, organ transplant, chronic steroid use) after 2 normal cytology tests 6 months apart.
Age to end screening	Screening may end at or after age 65† years and if 3 or more consecutive, negative tests have been documented within the prior 10 years.
Screening after total hysterectomy for either benign disease or prior history of CIN 1	Screening should not be performed.
Screening after total hysterectomy for CIN 2 or 3 (not invasive cancer)	Screening may end after 3 or more consecutive, normal tests have been documented.
Screening in pregnancy	Screen as above; do not screen within 3 years of becoming sexually active. Screening is discouraged in all pregnant women age 20 years and less.*

CIN indicates cervical intraepithelial lesion.

§ The US Preventive Services Task Force (USPSTF) in January, 2003 stated the evidence was lacking to preferentially recommend one cytology screening method over another. A RCT of over 45,00 women (*BMJ*, 2007) reported more false-positives with LBC but no increase in disease detection.

† As per the USPSTF

* The role of screening and colposcopy in pregnancy is to rule out invasive cancer only. Per national SEER data, the prevalence of invasive cancer in women under age 20 years is about 1 per 1,000,000. In contrast, positive Pap tests can be expected to occur in about 1 per 10 women of this age.

Guidelines for Initial Management of Abnormal Cervical Cytology, 2008

San Francisco General Hospital

These are guidelines for the initial management of cervical cytology performed in asymptomatic women as a screening tool for cervical cancer and its precursors.

Cytology Interpretation	Action
Common Benign Findings	
Unsatisfactory	Repeat cytology next available
Satisfactory, but no endocervical cells	Repeat cytology in 12 months
Benign-appearing endometrial cells	Premenopausal: No action. Post-menopausal: Endometrial biopsy.
Epithelial Cell Abnormalities	
Atypical squamous cells of undetermined significance (ASC-US)	Three different strategies may be adopted, but repeat cytology is preferred: 1. Repeat cytology at 6 and 12 months. If ASC-US+, colposcopy. After 2 normal cytology tests, resume routine screening. 2. HPV testing for high-risk types. If positive, colposcopy. If negative, repeat cytology in one year; <i>do not do HPV testing in women age 20 or less.</i> 3. Colposcopy[†] NOTE: If age 20 or less (pregnant and non-pregnant), repeat cytology at 12 months (colposcopy if ASC-H or HSIL+) and at 24 months (colposcopy if ASC-US+). If normal, resume routine screening. For pregnant women age 21+, repeat cytology at 6 months; if ASC-US+, colposcopy 6 weeks post-partum.
ASC, cannot exclude HSIL (ASC-H)	Colposcopy [†]
Low-grade SIL (LSIL)	Colposcopy [†] NOTE: If age 20 or less (pregnant and non-pregnant), repeat cytology at 12 months (colposcopy if ASC-H or HSIL+) and at 24 months (colposcopy if ASC-US+). If normal, resume routine screening. For pregnant women age 21+, colposcopy may be deferred to 6 weeks post-partum.
High-grade SIL (HSIL)	Colposcopy [†]
Squamous cell carcinoma	Colposcopy [†]
Glandular Cell Abnormalities	
Atypical glandular cells (AGC)	
• endocervical	Colposcopy [†] with endocervical curettage (ECC)
• endometrial	Colposcopy [†] with ECC and EMB
• not otherwise specified	Colposcopy [†] with ECC; add EMB if abnormal bleeding, chronic anovulation or age 35+
Adenocarcinoma <i>in situ</i> (AIS)	Colposcopy [†] with ECC and EMB
Common Infections	
• shift in flora suggestive of bacterial vaginosis (BV)	Consider evaluation of and treatment for BV if symptomatic. Repeat cytology at appropriate screening interval.
• fungal organisms consistent with Candida.	Consider evaluation of and treatment for yeast vaginitis if symptomatic. Repeat cytology at appropriate screening interval.
• cellular changes consistent with herpes simplex virus (HSV)	Diagnostic of HSV. Finding may indicate other STIs. Repeat cytology at appropriate screening interval.
• Trichomonas vaginalis (TV)	Consider evaluation of and treatment for TV if symptomatic. Finding may indicate other STIs. Repeat cytology at appropriate screening interval.

DEP indicates diagnostic excisional procedure (e.g., cone biopsy, loop excision). HSIL+ indicates HSIL, AGC, adenocarcinoma *in situ* and/or cancer. ASC-US + indicates ASC-US, ASC-H, LSIL and/or HSIL+.

[†]ECC should be performed in all non-pregnant women with unsatisfactory colposcopy and in those with cytology interpreted as AGC, AIS and cancer. Vaginal colposcopy with Lugol's solution should be performed in all women with no obvious lesion seen and cytology interpreted as HSIL, AGC, AIS or cancer. In pregnant women, biopsy lesions suspicious of invasive cancer; ECC is contraindicated.

Smoking cessation is advised in all patients.

Guidelines for Follow-up after Initial Colposcopy
San Francisco General Hospital, 2008

These are guidelines for the most common clinical scenarios. Patients may be managed individually based on clinical judgment.

Referral Cytology (pre-colposcopy)	Findings at initial colposcopy		
	No CIN	Biopsy-proven CIN I	Biopsy-proven CIN 2 or 3
ASC-US once	Repeat cytology in 12 months.		See “Guidelines for Treatment of biopsy-proven cervical intraepithelial neoplasia (CIN) 2 (moderate dysplasia) and CIN 3 (CIS, severe dysplasia)”
ASC-US twice (unknown HPV status)	Repeat cytology at 6 and 12 months: 6-month cytology result: If HSIL+, repeat colposcopy next available. If ASC or LSIL, repeat colposcopy in 6 months. If normal, repeat cytology in 6 months. 12-month cytology result: If ASC-US+, repeat colposcopy next available (unless colposcopy has been performed within prior 12 months). After 2 normal cytology tests, resume routine screening.		
ASC-US, positive high-risk HPV			
Atypical squamous cells, cannot exclude HSIL (ASC-H)			
Low- grade SIL (LSIL)			
High-grade SIL (HSIL)	Satisfactory colposcopy. ECC and vagina are normal: review referral cytology. If HSIL interpretation upheld, perform DEP (non-pregnant women only). If age 20 or less, colposcopy and cytology at 6, 12, 18 and 24 months is acceptable. If all tests are normal, resume routine screening.	Satisfactory colposcopy. ECC and vagina are normal: colposcopy and cytology every 6 months for 1 year is acceptable.	
	Unsatisfactory colposcopy. Perform DEP (non-pregnant women only).		
Atypical glandular cells (AGC)	Repeat cytology at 6, 12, 18 and 24 months. Repeat colposcopy if ASC-US+. After 4 normal cytology tests, resume routine screening. If AGC recurs, recommend pelvic sonogram to rule out ovarian malignancy. If ultrasound normal, perform cone biopsy.		
Adenocarcinoma in situ, cancer	Cone biopsy		

CIN indicates cervical intraepithelial neoplasia. SIL indicates squamous intraepithelial lesion. HSIL+ indicates HSIL, AGC, adenocarcinoma *in situ* and/or cancer. ASC-US + indicates ASC-US, ASC-H, LSIL and/or HSIL+. DEP indicates diagnostic excisional procedure (e.g., cone biopsy, loop excision).

Smoking cessation is advised in all patients.

Guidelines for treatment of biopsy-proven cervical intraepithelial neoplasia (CIN) 2 (moderate dysplasia) and CIN 3 (CIS, severe dysplasia)
San Francisco General Hospital, 2008

CIN 2 and 3 should be treated by either an ablative or an excisional procedure in non-pregnant women. Ablative methods include laser and cryotherapy; excisional methods include loop excision and cone biopsy. If colposcopy is satisfactory, CIN 2 may be managed in women under age 30 with colposcopy and cytology every 6 months for 2 years; otherwise, cryotherapy is the preferred treatment.

Procedure	Factors affecting choice
Cryotherapy	Appropriate for CIN 2 or 3 if following general criteria are met: • Satisfactory colposcopy • No prior cervical treatment • Lesion(s) completely visible and <2 cm in diameter • Lesion(s) can be covered entirely with the cryoprobe
Laser ablation	Candidacy as above. Often used for large lesions (>2 cm) with or without vaginal extension.
Loop excision (aka LEEP)	Choose for CIN 2 or 3 lesions in which cryotherapy is inappropriate (e.g., unsatisfactory colposcopy, ECC with CIN).
Cone biopsy	Choose instead of loop excision if suspicion for malignancy or recurrent atypical glandular cells (AGC) on cytology and/or cervical architecture disrupted.

ECC indicates endocervical curettage.

Guidelines for follow-up after treatment of CIN 2 or 3

Treatment	Follow-up
Cryotherapy or laser ablation	Cytology at 6 and 12 months; colposcopy for ASC-US+. After 2 negative tests, annual cytology.
Loop excision (LEEP) or cone biopsy	
Dysplasia in specimen, negative endocervical margin	Cytology at 6 and 12 months; colposcopy for ASC-US+. After 2 negative tests, annual cytology.
No dysplasia in specimen	
Dysplasia in specimen, positive endocervical margin	Cytology and ECC at 6 months; colposcopy for ASC-US+. Cytology only at 12 months; colposcopy for ASC-US+. Repeat excision if HSIL+ at any time. After 2 negative tests, annual cytology.
Hysterectomy	Annual cytology. After 3 consecutive, normal tests, screening may end.

ECC indicates endocervical curettage. ASC-US indicates atypical squamous cell of undetermined significance. HSIL indicates high-grade squamous intraepithelial lesion. HSIL+ indicates HSIL, AGC, adenocarcinoma *in situ* and/or cancer. ASC-US + indicates ASC-US, ASC-H, LSIL and/or HSIL+.

Smoking cessation is advised in all patients.

Screening for HIV should be considered in all women with biopsy-proven CIN 3.

Parasitic Infections

A. Definition

Infection of the GI tract by specific parasites. Chronic diarrhea is diarrhea lasting more than 2 weeks.

B. Clinical Implications during pregnancy

1. Anemia
2. Poor weight gain
3. Dehydration

C. Signs and symptoms

1. GI complaints
 - a. Persistent nausea and vomiting
 - b. Abdominal cramping
 - c. Diarrhea
 - d. Flatulence
 - e. Foul-smelling stools
 - f. Mucous or blood in stools
2. Constitutional complaints
 - a. Malaise
 - b. Fatigue
 - c. Anorexia, weight loss
 - d. Poor weight gain
3. Abnormal CBC
 - a. Iron deficiency anemia, particularly non responsive to iron therapy
 - b. Eosinophilia
 - c. Pernicious anemia
4. Liver Findings
 - a. Abnormal LFTs
 - b. Hepatomegaly
 - c. Jaundice, increased bilirubin
5. Splenomegaly

D. Diagnostic criteria

1. Infectious diarrhea risk assessment (caused by parasite, virus or bacteria)
 - a. Recent immigrant
 - b. Travel in developing countries
 - c. Refugee
2. Noninfectious diarrhea
 - a. HIV
 - b. Recent antibiotic use
 - c. Lactose intolerance
 - d. Food allergies
 - e. Medical disease eg. Crohn's, irritable bowel, diabetes or thyroid disorder

E. Management

Diagnostic

1. Stool for O + P to identify parasite (3 or more stool samples per CDC recommendation)

2. Stool cultures to identify bacteria. Bacterial diarrhea is most often self limiting lasting 3-4 days, but is persistent in a small percentage of patients
3. Make sure she has a recent HIV test
4. Consider CBC with differential

Therapeutic

1. The only parasite to be treated is Ascaris prenatally to avoid possible migration of parasite during general anesthesia. Give one time dose of Pyrantel Pamoate 11mg/kg (250mg doses). See Appendix A for treatment of other parasites in the postpartum period
2. Treat bacterial diarrhea with a 3 day course of Ciprofloxacin or Azithromycin
3. Oral rehydration
4. Lomotil
5. Encourage foods for optimal gut health for chronic diarrhea without a cause (flax seeds, slow cook oatmeal)
6. Probiotics

Education

1. Good handwashing, stool precautions as appropriate
2. Avoid caffeinated beverages

F. Follow Up

1. Do repeat stool O+P for TOC.
2. GI consult for persistent diarrhea.

Revised 8/2009

Parasite Treatment Guidelines

Parasite	Treatment	Precautions/ Patient Education/ Transmission
Amoebiasis Dientamoeba fragilis Entamoeba Histolytica (Traveler's diarrhea)	Metronidazole Panamoycin (Humatin) 25mg/kg/day in 3 doses X7 days (250mg doses) postpartum	Good handwashing & stool precautions
Balantidiasis	Metronidazole Iodoquinol	Cysts are ingested through contaminated food or water; occurs more frequently where pigs are raised.
Blastocystis	Do not treat unless symptomatic; postpartum; Iodoquina 650mg TID X 20 days	Acquired through contaminated food or water. Tx Pregnancy risk category C; no data for safety with breastfeeding.

Parasite	Treatment	Precautions/ Patient Education/ Transmission
Cryptosporidiosis Cryptosporidium parvum C. hominus C. felis C. meleagridis C. muris	None Self limiting Oral Rehydration	Transmission through infected drinking water, recreational use of infected water (swimming pools, water parks), and through contaminated food.
Giardia Giardia Lamblia	 Paromycin 25-35mg/kg/day in 3 doses X 3 days Or Metronidazole 250mg TID X 5days	Good handwashing & stool precautions. Tx Preg Risk Category C and safe in breastfeeding. Tx safe in 2nd and 3rd trimesters; not safe with breastfeeding (pump through treatment).
Hookworm Ancylostoma duodenal Hymeneno-lepsis Nana Necator Americans	Pyrantal Pamoate 11mg/kg one dose (250mg doses)	Preg Risk Category C; safe in breastfeeding. Parasite penetrates skin through feet.
Intestinal Fluke Clonorchis Sinensis Fasciola hepatic Fasciolopsis buski Heterophyses –Heterophyses Metagonimus Yokagawi Opisthorchis Viverrini Paragonimius westermani	 Praziquantel 75mg/kg/day given in 3 doses X1 (comes in 600mg doses) postapartum Thiabendazole 10 mg/kg X1 Praziquantel 75mg/kg /day in 3 doses X1 day(comes in 600mg doses) postpartum Praziquantel 75mg/kg/day in 3 doses X 2 days (comes in 600mg doses); postpartum	 Praziquantil: Preg Risk Category B. Not safe for 1st trimester. May give in 2nd or 3rd trimesters. Thiabendazole: Preg Risk Category C. Both Praziquantil and Thiabendazole are not safe for breastfeeding. Pump breasts on day of treatment. Transmitted from infected undercooked, salted, pickled, smoked fish or crab.
Isosporiasis	Trimethoprim-sulfamethoxole (160mgTMP/800mg SMX) po BID X10 days	More common in immunocompromised patients from tropical areas.

Parasite	Treatment	Precautions/ Patient Education/ Transmission
Roundworm Anncaris Lumbaris	Pyrantel Pamoate 11mg/kg X1 at 32 week (med comes in 250mg doses)	Pregnancy Risk Category C; no info for breastfeeding.
Strongyloides Stercorales	Thiabendazole 50mg/kg BID X2 days; do not exceed 3 grams; postpartum	Preg Risk Category C. Not safe for breastfeeding. Pump breasts on tx days. Parasite from contaminated soil penetrates skin to infect host.
Schistsomiasis Schistosoma Haematobium S.Mansoni	Praziquantil 40mg/kg in 2 doses in 1 day	Preg Risk Category C. Not safe for breastfeeding. Pump on treatment day.
S.Japonicum S.Mekongi	Praziquantil 60mg/kg in 3 doses in 1 day	Parasite penetrates skin in infected water. Found in Africa, Asia, Carribean and Middle East.
Tapeworm	Praziquantil 5-10mg/kg X1; after meal in postpartum period; comes in 600mg doses)	Preg Risk Category C. Not safe for breastfeeding. Pump during treatment.
Diphylloththriasis		Transmission from raw undercooked infected fish.
Taenia Saginata		Transmission from undercooked infected beef.
Taenia Solium		Transmission from undercooked infected pork.
Whipworm Trichuris Trichuria	Mebendazole 500mg X1	Preg Risk Category C. May decrease milk production. Treat when infant is weaned, since often asymptomatic. Transmission is from contaminated soil in food or on hands to mouth.

Parasite	Treatment	Precautions/ Patient Education/ Transmission
Other Parsites E.Nana Entamoeba Coli I.Butsehil E.Hartmani Chilomastix Mesnell	No need to treat	

Resources:

These guidelines were revised from the original developed by the midwifery staff at Highland Hospital, Oakland , CA in conjunction with Dr. Caroline MacLeod, Institute of Tropical Medicine.

Revisions were made based on CDC guidelines taken from the Medical Letter (Drugs for Parasitic Infections); April 2002.

Drugs in Pregnancy and Lactation: a reference guide to fetal and neonatal risk, Gerald G. Briggs, Roger K. Freeman, Summner J. Yaffe, fifth edition. 1998 Williams and Wilkens, Baltimore, Maryland.

Post Dates - Post Term Management

A. Definition

Gestation of 42 weeks or more. Although many consider 41 weeks post term.

B. Clinical implications

1. Larger baby
2. Possible higher risk of C/S in selected situations
3. Higher risk of instrument delivery and vaginal trauma

C. Management

Diagnostic

1. Review of dating criteria (LMP, positive HCG, initial visit, ultrasonography, and FHTs)
2. Leopolds for good estimation of EFW
3. Examine cervix. Bishops greater than 5 is favorable

Therapeutic

1. Consider sweeping membranes at 38-41 weeks. Discuss with client
2. See alternative methods of induction

Education

1. Offer induction at 41 weeks or expectant management. See counseling guidelines
2. Post dates management (tests, induction methods, risks and benefits)
3. Encourage sexual intercourse

Follow up

1. Biweekly antenatal testing should be initiated by 41 weeks gestation. This should include an NST and AFI
2. Kick count should be initiated at 40-41 weeks. The client should call if there are less than 10 movements counted in a 2-hour period. Give the client a kick count record and explain how to use it

D. Counseling re: Induction of Labor vs Expectant Management at 41-42 weeks

1. General points

- a. The woman's desire to induce labor is very important
- b. Discuss the possibility of a failed induction. There is no definition of a failed induction (Simon, 2005), but many use 2 days. Discuss the length of induction, process of induction
- c. As Russ Laros says, if after 12 hours of contractions without cervical change, the possibility of going home should be discussed

2. Dating

Poor dating criteria should be considered a risk for an over diagnosis of post datism. Every effort should be made to have the best dates possible. Consult the MD service in these cases to confirm plan

3. Induction of labor and Cesarean birth risk

In general, inducing your labor at 41 weeks alone does not increase your risk of having a cesarean birth. However, we know that some factors increase your risk of having a Cesarean birth

They include the following:

- a. Bishops score of 5 or less
 - i. The risk is somewhere between 25 and 30% (Vrouenraets, et al, 2005; Johnson, 2003) *SEE NOTE BELOW* However, it is unclear what role Bishop score plays. According to the Vrouenraets study, it is not the induction that increases the risk for CS, but the Bishop score

- ii. One study states that a multip with an unripe cervix has 3 times more likely to have a CS compared to spontaneous labor (Batista et al, 2007)
 - b. Nulliparity
 - i. Compared to a multip, CS risk is approx 2 times greater when inducing labor (Yeast, 1999) *SEE NOTE BELOW* However, a multip with an unripe cervix triples your risk for CS (Batista et al)
 - ii. IOL is the biggest risk for CS in a nulliparous woman (Yeast, 1999).
 - c. History of previous Cesarean birth
 - i. Restricts options for induction
 - ii. Risk is increased if CS was done secondary to labor dystocia
- *NOTE: A nullip with a Bishop of 5 or less has twice the risk of having a Cesarean birth (Vrouenraets, 2005). We also know that some factors decrease your risk of having a Cesarean birth. They include the following:*
- d. Bishops score of more than 5
 - i. The risk for CS is somewhere between 13-18% ((Vrouenraets, et all, 2005; Johnson, 2003).
 - e. Previous vaginal delivery
 - ii. For multips, postdatism very modestly increases risk of CS (OR 1.15) (Yeast, 1999)
4. Post dates and perinatal death
- The Cocharane review did not show that the relative risk of perinatal death was greater in the expectant management group. Although, there were more perinatal deaths in the expectant management group, it was not statistically significant. Therefore, this should not be a routine part of counseling.

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Revised 12/2007, 08/2009

Postpartum Depression Resources

September 2009

- 911
- SF DPH Mobile Crisis Treatment Team
(415) 355-8300
11 AM – 11 PM Monday – Friday
12 PM – 8 PM Weekends and holidays.
Anyone, including clients, can call for an evaluation of a psychiatric crisis in the community. Will see clients in the home or elsewhere, including the street, regardless of insurance status.
- SFGH Psychiatric Emergency Services
(415) 206-8125
1001 Potrero Avenue
24 hours a day, seven days a week.
Evaluation for hospitalization/legal hold.
- Westside Integrated Services - Community Crisis Clinic
(415) 355-0311
245 11th Street (at Howard)
8 AM – 8 PM Monday – Friday
9 AM – 6 PM Saturday.
Drop-in only; no appointments. Clients should go early to be seen. Provides services in English and Spanish. For information, call and press 5, leave a message, and they will return your call.

- Community Mental Health Access Referral Line
(415) 255-3737
8 AM – 5 PM, Monday – Friday.
Referrals to mental health therapists in San Francisco. Client can have Medi-Cal or be uninsured, but no private insurance. San Francisco residents only. Call and leave a message with basic questions and they will return your call. Provides services in English, Spanish, and Chinese.

- Postpartum Health Alliance of Northern California - Postpartum Depression Stressline
1-888-678-2669
9 AM – 9 PM seven days a week.
Free and confidential telephone support and referral to medical providers and support groups for women experiencing postpartum blues, depression, and anxiety. Call and leave a message and they will return your call within 24 hours. Provides services in English and Spanish.
- National Perinatal Hotline - Postpartum Moms' Line
1-800-773-6667
24 hours a day, seven days a week.
Provides counseling and referrals for women experiencing postpartum depression. Provides services in English and Spanish.

- Suicide Prevention
(415) 781-0500 / 1-800-SUICIDE
24 hours a day, seven days a week.
Trained volunteer counselors provide crisis telephone counseling, information, and referral.
- TALK Line Family Support Center/SAFESTART
(415) 441-KIDS or (415) 441-5437
1757 Waller Street (between Stanyan and Shrader)
TALK Line phone hours:
24 hours a day, seven days a week
Parent drop in hours:
9 AM – 2 PM Monday – Thursday;
5 PM – 7 PM Monday evenings.
Parental stress, child abuse prevention, emergency respite care, single parent network, parents' group, crisis counseling, substance abuse services and ongoing therapy. Childcare is available starting at 10 AM.

- Public Health Nursing – Women's and Children's Referral Line
1-800-300-9950
8 AM – 5 PM Monday – Friday.
Home visits to high-risk prenatal and postpartum women and chronically ill children. Provides services in English, Spanish, and Chinese.

Additions or changes? Call SFDPH, MCAH, Perinatal Services, 575-5681. To print a copy, go to <http://www.sfdph.org/dph/commupg/oprograms/MCH/default.asp>

<i>(Community Resources continued)</i> Infant Parent Program (415) 206-5270 2550 23rd Street (at SFGH), Building 9, #130 8 AM – 5 PM, Monday – Friday. Intensive mental health services to children at risk. Birth – age 3. Home visits by professional staff. Provides individual psychotherapy treatment. Focus on mother-baby relationship. Serves only San Francisco residents with Medi-Cal. UCSF Pregnancy and Postpartum Mood Assessment Clinic (415) 353-1980 UCSF Outpatient Obstetrics Clinic 400 Parnassus Avenue, Plaza Level Evaluations for pregnant and postpartum patients who may be suffering from depression/anxiety. Treatment referrals made to therapists and for medication, resources, and support groups in the greater Bay Area. Provides education and counseling on postpartum depression for women and their partners. Call Tuesday- Friday to schedule an appointment. Epiphany In-Home Services Program (415) 567-8370 100 Masonic Avenue Provides in-home parenting education and support services to parents with children 0 – 5 years old. No income limit. Insurance or Medi-Cal are not required. Asian Perinatal Advocates Family Support Services (415) 616-9797 730 Commercial Street Home visitation program, counseling, family hotline, domestic violence program, support groups and Family Resources Network.	Parents Place (415) 359-2454 parentsplacesf@jics.org Koret Family Resource Center 1710 Scott Street Full service parenting resource center offering consultation for parents, counseling for children and families, and referrals, as well as a wide variety of parent-child activity groups, parenting education groups and workshops, a free lending library, and more. Phone consultation available as appropriate. Services available in English, Spanish, Cantonese, Russian, and Polish. <i>Resources for SFGH & Community Health Network (CHN) Outpatients</i> Psychiatry Services at SFGH OB Clinic (5M) (415) 206-3409 Postpartum psychiatric follow-up services (3-6 months) for SFGH and CHN women who were previously seen prenatally for psychiatric consultation at SFGH's High Risk OB Clinic (5M) on Thursday mornings, 9 AM - 12 PM. If a client is a patient of the High Risk OB Clinic, she can call Dr. Anna Spielvogel at 206-5191. New clients can make an appointment for prenatal psychiatric services by calling SFGH Women's Health Center (5M) at 206-3409 8 AM – 5 PM Monday – Friday, and asking to make a Psychiatry appointment during the Thursday morning High Risk OB Clinic. Women who have not been seen prenatally may be provided services postpartum if an opening is available. CHN and SFGH clinic providers can call Dr. Anna Spielvogel, Dept. of Psychiatry, (415) 206- 5191 for consultation Tuesday through Friday.	<i>Child Protective Services</i> SF Human Services Agency Child Abuse Reporting (415) 558-2650 24 hours a day, seven days a week. <i>Online Resources</i> www.postpartum.net Postpartum Support International Promotes awareness, prevention and treatment of perinatal mood disorders. Helps women access information, social support and informed professional care. Website directs to regional coordinators to help with local resources. There is also a "Chat with the Expert" line that covers various postpartum topics. See website for schedule. www.healthymregnancy.ucsf.edu Free internet-based prevention of postpartum depression project developed by Alinne Barrera and Ricardo Munoz, PhD, UCSF.

Additions or changes? Call SFDPH, MCAH, Perinatal Services, 575-5681. To print a copy, go to <http://www.sfdph.org/dph/comupg/oprograms/MCH/default.asp>

Prenatal Diagnosis – Genetic Counseling Referral

- A. Patients with increased risk of fetal anomalies or aneuploidy can be evaluated by the UCSF Prenatal Diagnosis Clinic (PDC). PDC visits may either be held at UCSF, or more typically once a week at SFGH. Regardless of where visit will happen, appointments are made via the PDC. Prenatal diagnosis and counseling should be offered (and documented) to all clients who have the following:
1. Abnormal first or second trimester serum screening or abnormal fetal nuchal translucency
 2. Suspected or known fetal abnormalities on ultrasound
 3. Advanced maternal age (35 years or greater at EDD, 32 years if carrying twins)
 4. Consanguineous relations
 5. Family history of genetic disorder (hemophilia, cystic fibrosis, NTD, Down's syndrome)
 6. Family history of mental retardation or developmental delay
 7. Family history of recurrent pregnancy loss including spontaneous abortion
 8. History of stillbirth
 9. Hx ETOH use in pregnancy, and/or other substance abuse in pregnancy
 10. Hemoglobinopathies, i.e., esp. MCV<80 or any electrophoresis abnormalities (see Hemoglobinopathy guideline)
 11. Known genetic disorder or illness
 12. Radiation exposure
 13. Suspicious reoccurrence of illness or disability in family
 14. Varicella, Fifth's disease, Rubella, Toxoplasmosis, CMV, Syphilis in current pregnancy
 15. 3 or more spontaneous abortions
 16. Any other disorders noted in Prenatal Genetic screen
- B. Fetal diagnoses during pregnancy may also be indications for referrals to the PDC. For cleft lip/palate, PDC will counsel and will then refer the patient to the UCSF Craniofacial Clinic.
- C. Obtaining Prenatal Diagnosis referral:
1. Generally, the RNs obtaining the initial medical history will refer the client to the PDC if screening reveals any of the above
 2. If you need to refer to the PDC yourself do the following:
 - a. If needed (eg. if you are informed by phone re: a positive genetic screen), contact the patient and review findings and options with her. Do not proceed with what follows until patient has been informed, unless there is no other option – ideally the patient will hear from a ZSFG provider about the diagnosis before she receives a call from the PDC for an appointment.
 - i. Call the PDC at 415 476-4080, and press "1" to speak with a scheduler. You will need to have certain patient information available, thus proceed as follows:
 - ii. Have this info readily available when you make the call by opening the patient's chart in eCW and clicking on the "Info" tab (next to the "Hub" tab)
 - iii. This will give you the info you need: patient name, DOB, mailing address, and MediCal number
 - b. If it is a WHC patient, finish by sending a TE to Esther Ramos letting her know that you made a PDC referral for this patient. She will handle details like sending the PDC prior authorizations and copies of needed labs. .

Revised 08/2009, 01/2018

Preterm Labor and Birth

A. Definition

Documented cervical change that occurs at or before 36 weeks gestation. Pathogenesis unclear.

B. Clinical Implications

Low birth weight resulting in increased infant morbidity and mortality. Incidence in 2005-12.5%, with 2% less than 32 weeks

C. Risk Factors:

1. History of preterm birth
2. Low socioeconomic status
3. African-American
4. Maternal age <17 or >35
5. Smoking
6. Low maternal prepregnancy weight
7. Hx of second trimester abortion
8. Uterine malformation
9. Cervical insufficiency
10. Multiple gestation
11. Polyhydramnios
12. Abdominal surgery
13. Placenta previa
14. PPROM
15. Maternal or fetal condition requiring preterm delivery
16. Urinary tract infection
17. Cocaine use
18. Chorioamnionitis
19. Vaginal bleeding in more than one trimester
20. High social stress

D. Signs and symptoms

1. Uterine contractions, which are frequently painless
2. Back pain, constant or intermittent
3. Menstrual –type cramping
4. Pelvic pressure
5. Change in vaginal discharge
6. Bloody show
7. Also evaluate for uterine tenderness, which may be a sign of intrauterine infection

E. Diagnostic criteria

1. Gestational age 20-37 weeks
AND
2. Documented uterine contractions
AND
3. One of the following:
 - a. Ruptured membranes
 - b. Documented cervical change

- c. Cervical effacement of 80%
- d. Cervical dilation of at least 2 cm or greater

F. Management

Diagnostic

1. At w/u visit do comprehensive review of patient's obstetric history.
2. See new patient handouts for women with a history of PTB and women receiving or considering Makena or Progesterone
3. For women with a history of preterm birth (before 37 weeks) refer to HROB for a consultation re: possible possible IM progesterone (Makena, for hx PTB) or PV progesterone (for short cx). If a woman will need multiple HROB visits for treatment she will be offered transfer of care to HROB, joint HROB and CNM care (if she is ok with the number of visits), and/or HROB and then return to CNM care after therapies are finished.
4. Makena:
 - a. For women with prior singleton birth 20-37 wks due to PPROM or spontaneous labor, current singleton IUP and normal cx length
 - b. Will need to go to WHC for weekly IM injections through 36 weeks
 - c. Will have transvaginal u/s's in 5M q 2 weeks 16-24 weeks
 - d. Ideally Makena initiation starts 16-20 weeks GA
5. PV Progesterone:
 - a. May on occasion be used for women with a history of PTB who are not good candidates for Makena. Is not evidence-based but is thought to perhaps be better than nothing
 - b. Typically used for women who have an incidental finding of a short cervix on an ultrasound
 - c. These women receive u/s for cervical length q 1-2 wks until 24 weeks, and progesterone pv qhs until 36 weeks
5. Any patients in the outpatient setting with concerning symptoms of preterm labor should be considered for evaluation on the Birth Center
 - a. If planning on sending patient to Birth Center for evaluation, do not do cervical exam, so the examining midwife can obtain fetal fibronectin (fFN), wet mount, and r/o PPROM
 - b. If concerned about threatened PTL consider wet mount, GC/CT, GBS culture
6. For patient with s/s preterm labor, consider urine C+S, assess for UTI
7. Ultrasound cervical length has good negative predictive value
 - a. Cervical length $\geq$ 35mm has a very low risk of PTB
 - b. 25-35mm a higher risk of PTB and
 - c. Less than 25mm a high risk of PTB.

Therapeutic/ Education

1. Fish oil supplements (2.7 -4 gm/day) may reduce risk of PTD (OR .54 of recurrence of PTB in women with previous PTD in one study). Women who eat DHA enhanced eggs (7.5 eggs/week) had decreased LBW, and PTB.
2. Zinc intake of 20mg daily (low intake is associated with preterm labor).
Food sources of zinc include: Nuts and seeds (pumpkin seeds, pecans, brazil nuts, peanuts, almonds, walnuts) Liver, Crab, Chicken, whole grains (wheat germ, rye, whole wheat, oats)
3. Folic acid intake 400mcg daily (low dietary intake and low concentration of serum folate are associated with a twofold greater risk of PTD)
4. Notify provider if client experiences 6 uterine contractions or more per hour
5. Pelvic rest
6. Reduction in physical activity
7. Encourage hydration (probably not helpful, but not harmful)
8. Consider mindfulness-based stress reduction

Note: Hydration and bedrest have been recommended in the past, but has not been proven to shown to have benefit.

Follow up

1. If cervical exam is concerning for PTL, or if patient endorses concerning s/s PTL, send patient to the Birth Center for monitoring, observation and consultation
2. Women with minimal cervical change can be managed by the midwifery service. Women requiring tocolysis will be transferred to the MD service while in house for tocolysis. They may return to midwifery care after hospital discharge

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Revised 11/2003, 08/2009, 01/2018

Rh D Negative

- A. Definition: Rh D is an antigen present on the surface of red blood cells. “Rh D positive” denotes the presence of Rh D antigen. “Rh D negative” means the antigen is not present. If an Rh D Negative mother is exposed to the Rh D antigen (i.e. through transfusion or exposure to Rh D antigen in fetal blood cells), then her body can produce antibodies that can cross the placenta and attack fetal RBCs with the Rh antigen

Du antigen: Also known as “weak D”. Patients who are Du positive or weak D positive are considered Rh D positive and should not receive anti-D immune globulin

Anti-D immune globulin (Rhogam) is given to prevent Rh D alloimmunization. The immune globulin is successful in reducing the rate of developing antibodies to the Rh D antigen.

- B. Incidence: Incidence of Rh D negative blood varies in different populations, from <1% to 35%

C. Pregnancy Implications

1. Untreated Rh-negative women have about a 10% (7-13%) incidence of sensitization. The use of anti-D immune globulin decreases the incidence of sensitization to less than 1%
2. Among anti-D alloimmunized pregnancies, mild to moderate hemolytic anemia and hyperbilirubinemia occur in 25-30% of fetuses/neonates, and hydrops fetalis occurs in another 25% of such cases
3. Any patient with a titer of greater than 1:4 is considered sensitized
4. The half-life of anti-D immune globulin is approximately 25 days, but is detectable for up to 3-6 months. Therefore a woman with a positive antibody screen 6 months postpartum should be considered sensitized
5. You cannot cause harm a woman who has a positive titer by giving her anti-D immune globulin, but it will not do any good and is a waste of the product

D. Management

General

1. Blood type, Rh, and antibody screen drawn at intake visit
2. If pt. Rh D negative, ascertain Du status. If pt. Rh D negative, Du positive, patient will not require anti-D immune globulin
3. If patient Rh D negative and Du negative, draw an antibody screen at 28 weeks before giving anti-D immune globulin. The following are options for this blood draw:
 - a. Have the 3rd trimester labs with ABS blood drawn 1-2 days before their next visit. This option is preferable
 - b. Have 3rd trimester labs and ABS drawn on day of clinic visit and have the patient come back to the clinic for their anti-D immune globulin that same day
 - c. RN or MA on 5M draws ABS, and then gives anti-D immune globulin. Patient must get 3rd trimester labs separately. This option is preferable for those who you feel may not go to get their ABS.

Note: The lab policy states that the ABS should be done no more than 72 hours before receiving Rhogam.
4. It is the midwife’s responsibility to follow up on the antibody screen. If the patient is on reduced frequency prenatal visits, the midwife will need to arrange follow up either via making a follow up card for the on call midwife or personally following up
5. All Rh negative, Du negative women should receive 300 mcg of anti-D immune globulin at 28 weeks of gestation after they have had an antibody screen. If their baby is determined to be Rh positive after birth, they will require anti-D immune globulin within 48-72 hrs postpartum
6. All Rh negative, Du negative women should receive a dose of anti-D immune globulin for any possible incidence of maternal-fetal hemorrhage
 - a. Vaginal bleeding
 - b. Miscarriage or abortion
 - c. Ectopic pregnancy

- d. Abdominal trauma or possible abdominal trauma (i.e. fall)
 - e. Amniocentesis
 - f. External cephalic version attempt
7. The dose will depend on when in the pregnancy the risk for maternal-fetal blood exchange occurred. Typically, incidences occurring in the first trimester require a mini-dose of 50 mcg and incidences occurring in the second and third trimester require the full dose of 300 mcg. Incidences of potential fetal-maternal hemorrhage may require additional anti-D immune globulin
 8. If the antibody screen of a known Rh D neg Du neg woman could not be obtained for some reason, give anti D immune globulin 300 mcg IM. This should rarely happen, as 5M staff are able to draw an antibody screen in clinic. You cannot do any harm by giving anti-D immune globulin to a sensitized woman, although it is a waste of the product
 9. If it is unclear whether the patient received anti-D immune globulin for any of the prescribed reasons, a negative antibody screen will show that she did not. If it is not possible to get an antibody screen, give the appropriate dose of anti-D immune globulin IM. It is more important that she receives anti-D immune globulin to prevent sensitization
 10. If patient has received anti-D immune globulin and later has an amniocentesis, abdominal trauma, vaginal bleeding, or external cephalic version, she will need an additional dose of Rhogam
- E. Rh D negative, Du negative, D antibody screen positive.
- Consult
1. An antibody titer will be done automatically by the Blood Bank. If the lab thinks that the client has received anti-D immune globulin before the antibody is drawn, they will not do a titer and you will have to specifically ask for it. Therefore, it is important to follow up on a titer after receiving a positive antibody screen
 2. If the titer is $\geq 1:16$, immediately transfer care to the medical service.
 3. All patients should have a HROB consultation at a minimum. For a titer of $<1:16$, the patient may be able to continue with midwifery care if agreed upon by both services.
 4. A patient who has received anti-D immune globulin before an antibody screen has been drawn will have a positive antibody screen and a low titer (1:2 or 1:4)
 5. The implications of a sensitized woman's pregnancy will depend on when she was sensitized. The implications for her current pregnancy and plan of care will need to be determined by the MDs during a high-risk consultation
 6. These patients will typically be managed with: titers q 4 wks and then q 2 wks after 24-28 wks, until delivery; if titers $<1:8$ no need for MCA Dopplers; no need for antenatal testing; IOL by 40.5 wks; do NOT give Rhogam; ECV contraindicated.
 7. Appropriate teaching to client about Rh status and implications, possible need for postpartum anti-D immune globulin if baby is Rh positive.

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Revised 06/2007, 08/2009, 01/2018

Rubella in Pregnancy

- A. Definition: Rubella (also known as German or 3-day measles) is usually a mild viral illness that may be subclinical
- B. Incidence
 - 1. Since 1966, the incidence of reported rubella cases has fallen from 28/100,000 to 1/100,000
 - 2. In 1996 there were only 238 cases of rubella and 4 cases of congenital rubella syndrome (CRS) reported in the United States
 - 3. By reproductive age, about 75-85% of the population has had rubella, with about half the cases being subclinical infections
 - 4. Immunity is lifelong with wild virus infections
 - 5. Immunity secondary to vaccination may disappear, necessitating re-vaccination
- C. Transmission
 - 1. Incubation period is 12-23 days
 - 2. Infectious period is from 7 days prior to rash onset, and continues until 7 days after rash onset
 - 3. Rubella virus is spread by droplets or direct contact with infected persons or articles contaminated with nasopharyngeal secretions
 - 4. Transmission during pregnancy is transplacental
- D. Clinical Illness
 - 1. Rubella infection is characterized by an acute onset of generalized maculopapular rash which typically starts on the face and lasts only a few days, temperature of more than 37.2, arthralgia, and lymphadenopathy, especially in the neck. There may also be conjunctivitis and a sore throat
- E. Implications in pregnancy
 - 1. The risk of CRS is about 85% if infection occurs at or before 8 weeks of gestation, 52% from 9-12 weeks of gestation, and rare after 20 weeks gestation
 - 2. Complications include miscarriage and stillbirth, and anomalies may include cataracts, patent ductus arteriosus, deafness, glaucoma, developmental delays, splenomegaly, and microcephaly
- F. Lab Tests
 - 1. All pregnant women will get a Rubella titer (IGG) to check for immunity. These results are expressed as “evidence of immunity” or “no evidence of immunity”
 - 2. IGG will be elevated from 7-10 days after onset of symptoms to 2-3 weeks late
 - 3. Rubella IGM may be ordered to try and identify current infection. It is detectable 4-5 days after rash onset, and will persist for 3-6 weeks
- G. Management of patients with no evidence of Rubella immunity
 - 1. Inform patient of lab results and low likelihood of infection as Rubella is so rare
 - 2. Review of symptoms in the previous 2-6 weeks to ascertain there has not been a recent exposure to Rubella
 - 3. Teaching:
 - a. s/s Rubella
 - b. call but do not come to clinic if s/s Rubella-she does not want to infect other women, but we do want to see her and evaluated her illness (can be seen in the ER)
 - c. vaccine pp at discharge from the hospital
- H. Management of a patient who you think may have Rubella:

1. Isolate her from other pregnant or potentially pregnant women
2. Draw Rubella IGM and IGG
3. Prenatal Diagnosis referral if infection occurred before 20 weeks
4. Teaching re transmission, avoid other pregnant or potentially pregnant women, possible teratogenic effects, no treatment
5. Consult

**Note:* Rubella vaccination is not recommended during pregnancy because the vaccine is an attenuated live virus that could theoretically cause malformations. Women who do not know they are pregnant and who receive a rubella vaccine can be reassured, as no evidence of teratogenicity from the vaccine has been demonstrated.

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Revised 8/2009

Substance Use Disorder

A. Definition

The midwifery service cares for women in all stages of recovery, unless medical risk or treatment necessitates HROB care.

B. Risk factors/ possible signs of drug use

1. Lapses in care or scant care
2. Possibly chaotic social life
3. Inappropriate behavior
4. Lack of eye contact (if culturally appropriate)
5. Demonstrated mood swings, emotional lability
6. HTN
7. Cellulitis, skin abscesses, track marks
8. cardiac arrhythmias
9. GI tract inflammation
10. Inflamed or indurated nasal mucosa
11. Poor weight gain
12. S/SX PTL
13. S<D
14. Family history of substance use
15. Frequent encounters with law enforcement agencies
16. Having a partner who is a substance user. This is particularly important in female patients who are often introduced to and supplied with drugs by a male partner
17. History of drug or alcohol mediated problems (eg, pancreatitis, skin abscess, subacute bacterial endocarditis, suspicious trauma)
18. Children with neurodevelopmental or behavioral problems
19. Children not living with the mother or involved with child protection agencies
20. Past obstetrical history of unexplained miscarriage, growth restriction, premature birth, abruptio placentae, stillbirth, or precipitous delivery

C. Clinical Implications in Pregnancy

Drug	Perinatal outcome	Neonatal outcome
Heroin	Preeclampsia Third trimester bleeding Malpresentation Nonreassuring fetal status Passage of meconium Low birth weight Perinatal mortality Puerperal morbidity	Prematurity Opiate withdrawal Postnatal growth deficiency Microcephaly Neurobehavioral deficits SIDS
Marijuana	Maternal anemia	LBW Increased admission rates to the NICU
Cocaine	Spontaneous abortion Prematurity Abruptio placenta	Lower IQ scores Cognitive deficits

	Fetal death Decreased birth weight, length and head circ Hypertension	
Methamphetamine	S<D Most studies done in animals.	No long term research Increased physiological stress. Heavy MA use: Neurobehavioral patterns of decreased arousal, lethargy, increased stress, and poor quality of movement.

D. Management

Diagnostic

1. Consultation on substance use disorders in pregnancy can be obtained either by telephone or e-consult through the UCSF Clinician Consultation Center. A description of their services follows:

Substance Use Warmline – Free advice for clinicians

The University of California, San Francisco's, Clinician Consultation Center provides substance use management consultation to health center providers. This is a free, real-time clinician-to-clinician consultation service, addressing the care and treatment of people with, or at risk for, substance use disorders. Access the Substance Use Warmline toll-free at: 1-855-300-3595 (Monday-Friday, 6 a.m.- 5 p.m. PT). The link for online submission of a request for consultation can be found at <http://nccc.ucsf.edu/clinician-consultation/substance-use-management/>

2. Indications for a urine tox screen have been established via a Birth Center policy from 10/2017. Indications are:
 - a. Late prenatal care (after 32 weeks). Women who receive prenatal care at other institutions or in their home country prior to transferring are not considered late.
 - b. Suspicion of placental separation/abruption not readily explained by other causes (eg. trauma, hypertension)
 - c. Report of drug use or positive urine toxicology screen within 3 months of patient encounter, or physical signs of substance use disorder
 - d. Behavior consistent with intoxication or withdrawal

For patients with the above indications, obtain a urine toxicology screen only after consent of client. Engage in a conversation with the client about the tox screen and whether it might be useful for her in any way.
3. Encourage HIV and Hep C testing, if not already done. Repeat HIV testing in the third trimester. Rapid HIV testing in labor might be appropriate in some circumstances (Consult with MD team or BAPAC team as appropriate)
4. Third trimester STI screening
5. LFTs if ETOH is drug of choice
6. If patient has an opiate dependency and would benefit from Buprenorphine therapy, simplest would be to transfer her to either Tuesday or Wednesday morning CNM clinics. What is needed for these women is access to a physician who has training and certification for management and prescribing of this medication. On Tuesday mornings Deb Cohan is willing to do this with our patients, and on Wednesday mornings Beth Harleman can also serve in this role. Note: Deb is not always in her Tuesday morning HIVE clinic, though typically when she is not in clinic she is the L&D attending of the day, and is willing to help us via phone consult if not physically present. Given this, if a transfer is happening from a non-Tuesday CNM clinic it is probably best to transfer into Wednesday morning clinic.

Therapeutic

1. Consider seeing client at closer intervals.
2. Connect client to the Homeless Prenatal Program, where she will receive case management as a part of the New Beginnings program. These case managers have expertise in substance use disorders and can help women get into treatment.
3. Offer Hep B vaccination if not previously immunized. If unsure, get HBsAb.
4. Make MSW referral.

Education

1. Give client appropriate referrals.
2. Educate client re: possible side effects of drugs (maternal and fetal).

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Revised 1/2018

Syphilis in Pregnancy

- A. Definition: Syphilis is a sexually transmitted disease caused by the spirochete *Treponoma Pallidum*. The disease progresses through 4 stages: primary, secondary, latent (early latent and late latent), and tertiary. Central nervous system disease (neurosyphilis) can occur at any stage of syphilis
- B. Incidence
 - 1. There are about 120,000 cases of syphilis in the United States each year
 - 2. The rate of congenital syphilis is about 20.6/100,000 live births, with most occurring in New York, Florida, Texas, California, and Michigan
 - 3. 90% of congenital syphilis cases are African American or Latino, and 50% were born from mothers with no prenatal care
 - 4. In 2002 in San Francisco, the rate of syphilis among women was 2.9/100,000. There were no reported cases of congenital syphilis in San Francisco in 2002 or 2003
- C. Transmission
 - 1. Syphilis is usually acquired through sexual contact, and the probability of acquiring syphilis from an infectious partner is about 50%
 - 2. It can also be contracted from blood, as well as transplacentally
 - 3. The lesions of primary and secondary syphilis are contagious, and syphilis can also be transmitted in the early latent stage
- D. Clinical Illness
 - 1. Primary syphilis is characterized by:
 - a. A highly contagious chancre, a primary, painless, indurated, ulcerative lesion at the site of infection (mouth, cervix, vagina, vulva, anus or rectum)
 - b. Chancre appears 10-90 days after infection, and heals spontaneously in 2-8 weeks. There may be associated lymphadenopathy
 - c. An antibody response is not measurable for 3-6 weeks after infection. 50% of those with primary syphilis go directly to the latency stage, while 50% develop secondary syphilis
 - 2. Secondary syphilis
 - a. Signs and symptoms appear 1-6 months after infection (average time 6-12 weeks)
 - b. Include a characteristic papular rash of the palms and soles and occasionally trunk (90%), patchy alopecia, condylomata lata (highly contagious, flat, wart-like lesions), mucous patches (35%) (painless dull erythematous patches or grayish white erosions) on the mouth, vulva, vagina, or cervix, general malaise and low grade fever (40%), and generalized lymphadenopathy
 - c. Manifestations of secondary syphilis last 2-10 weeks.
 - 3. Latent syphilis has no clinical manifestations
 - a. Early latent syphilis is when syphilis has been acquired within the last year—in order to make the diagnosis there must be documented seroconversion or obvious primary or secondary infection
 - b. Late latent syphilis is syphilis that has been acquired for over one year. In general patients with late latent syphilis infection are asymptomatic and not contagious, with the exception of transplacental transmission and transmission through blood
 - 4. Tertiary syphilis
 - a. Associated with high morbidity and mortality
 - b. Can appear between 1-30 years after syphilis infection
 - c. Characterized by gumma (soft tissue granuloma tumors seen in the liver, brain, heart, bone, and skin, and cardiovascular syphilis)

- d. About one third of untreated patients will develop tertiary syphilis
- 5. Neurosyphilis can occur at any stage of syphilis infection and may cause uveitis, retinitis, optic neuritis, auditory symptoms, cranial nerve palsies, and meningitis.
- E. Implications in Pregnancy
 - 1. Transplacental infection of the fetus can occur at any stage of syphilis infection of the mother
 - 2. 40% of pregnancies in women with untreated syphilis result in loss due to SAB, stillbirth, or perinatal death, and another 40% are born with congenital syphilis
 - 3. In untreated early syphilis, the risk of fetal infections is 70-100%; the risk is about 30% in latent syphilis
 - 4. The degree of fetal infection is determined by the maternal stage of syphilis, the weeks of gestation at the time of the infection, the rapidity of maternal diagnosis and treatment, the adequacy of maternal treatment, and the immunologic response of the fetus
 - 5. Congenital syphilis is characterized by non-immune hydrops, IUGR, jaundice, hepatosplenomegaly, mucocutaneous lesions, and bone, ocular, and CNS abnormalities
- F. Lab Tests
 - 1. All pregnant women receive syphilis screening at entry into care and again at 26-28 weeks with a non-specific antibody test, the rapid plasma reagin (RPR) test. Positive RPR results are expressed as titers
 - 2. RPR titers begin to rise during primary syphilis, peak during the secondary stage, decrease during the early latent stage, and progressively decrease to a very low or non-reactive titer during the late latent stage
 - 3. Patients with treated syphilis may continue to have low-level RPR titers of 1:1 up to 1:4 despite adequate treatment
 - 4. If the RPR is reactive, confirmatory testing is done with a specific antitreponemal antibody test, the TP-PA, which will be either positive or negative.
 - 5. TP-PA will stay positive throughout life once the patient has had syphilis, regardless of treatment
- G. Management of patients with a reactive RPR and a negative TP-PA
 - 1. False positive RPRs may be caused by viral infections, malaria, autoimmune diseases, narcotics use, and pregnancy, and are usually only weak or borderline reactions (i.e. titers of 1:1, 1:2, or 1:4). Review for autoimmune symptoms (i.e. malar rash, joint pain), and consider getting an ANA. See following table for potential causes of false positive RPR.
 - 2. Antibody titers will become positive between 2-6 weeks after the appearance of a primary chancre, so do a review of syphilis symptoms and physical exam to rule out primary syphilis
 - 3. If primary syphilis ruled out, repeat RPR in one month
- H. Management of patients with a reactive RPR and a positive TP-PA
 - 1. If titer is low (weakly reactive or 1:1, 1:2, or 1:4), ask if patient has been treated for syphilis
 - a. If syphilis treatment has been clearly documented, with documented falling titers, patient is unlikely to need treatment
 - b. Review s/s syphilis and do physical exam. If all negative:
 - i. Repeat RPR monthly throughout pregnancy. A four-fold increase in titers may indicate re-infection
 - ii. Teach patient re safe sex, make sure she is not at risk for re-infection
 - iii. Explain to patient meaning of lab results
 - iv. Consult MD to confirm plan
 - c. If history and physical exam positive, treat for appropriate stage of syphilis (see below)
 - i. If there is no clear documentation of treatment and declining titers, presume the patient has late latent syphilis and treat (see below)

- d. If titer 1:8 or greater, and patient has not been recently treated for syphilis:
 - i. Review s/s syphilis and do physical exam
 - e. Base treatment on stage of syphilis (see below)
2. Test for HIV
- I. Treatment of syphilis
 1. Determine if patient is Penicillin allergic. If PCN allergic, consult for desensitization
 2. Primary, secondary, and early latent syphilis are treated with Benzathine penicillin G, 2.4 million units IM x1
 3. Late latent syphilis is treated with Benzathine penicillin G, 2.4 million units IM weekly x 3 consecutive weeks
 4. You must fill out a "Confidential Morbidity Report (CMR) Form."
 (<http://dphnet.dph.sf.ca.us/Forms/FormSrc/CommDiseasesRptableyCMR062007.pdf>) Instructions on where to fax it are on the form 431-4628. (The resource nurse can fax this). The forms are also available at the SF City Clinic website
- J. Teaching:
 1. Mode of transmission
 2. Safe sex, importance of partner treatment (send partner to City Clinic for treatment)
 3. Fetal effects and follow-up
 4. Importance of follow-up and weekly penicillin for three weeks
 5. Counsel patient that TPPA will always be positive
 6. Counsel re possibility of Jarisch-Herxheimer reaction
 - a. A systemic reaction that occurs a few hours after initial penicillin injection
 - b. Abrupt onset of fever, chills, myalgias, headache, tachycardia, hyperventilation, vasodilatation with flushing, and mild hypotension
 - c. Lasts 12-24 hours
 - d. Thought to be caused by the release of heat stable pyrogen from the spirochetes
 - e. Occurs most often with treatment of primary or secondary syphilis
 - f. 67% have preterm labor or non-reassuring fetal monitoring
 - g. If patient experiences symptoms, she should go to the Birth Center
- K. Other
 1. You must fill out a "Confidential Morbidity Report (CMR) Form." Instructions on where to fax it are on the form 431-4628. (The resource nurse can fax this). The forms are also available at the SF City Clinic website
 2. Test for HIV, HbSAg, GC/CT
 3. Prenatal Diagnosis referral if before 22 weeks
 4. Level II ultrasound, and follow up ultrasounds for growth
 5. Notify pediatricians at time of birth
- L. Follow-up
 1. Monthly RPR. There should be a 4-fold decrease within three months, if not, consider retreatment
 2. Follow up ultrasounds for growth

If there is any question about the appropriate treatment for a pregnant woman with syphilis, call the DPH for expert physician consultation

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Revised 8/2009

Table 14.10

Potential Causes of False-positive Tests for Syphilis

Nontreponemal Tests

Infectious Causes

- Pneumococcal or mycoplasmal pneumonia
- Scarlet fever
- Leprosy
- Lymphogranuloma venereum (LGV)
- Relapsing fever
- Bacterial endocarditis
- Malaria
- Rickettsial disease
- Psittacosis
- Leptospirosis
- Chancroid
- Tuberculosis
- Trypanosomiasis
- Vaccina (vaccination)
- Chickenpox
- HIV infection
- Measles
- Infectious mononucleosis
- Mumps
- Viral hepatitis

Noninfectious Causes

- Pregnancy
- Chronic liver disease
- Advanced cancer
- Intravenous drug use
- Multiple myeloma
- Advancing age
- Connective tissue disease
- Multiple blood transfusions

Treponemal Tests

Infectious Causes

- Lyme disease
- Leprosy
- Malaria
- Infectious mononucleosis
- Relapsing fever
- Leptospirosis

Noninfectious Causes

- Systemic lupus erythematosus

Adapted from Hook III, E.W., & Marra, C.M. (1992). Acquired syphilis in adults. *New England Journal of Medicine*, 326, 1062. ©1992 by The Massachusetts Medical Society. Reprinted with permission.

Table 14.10

Potential Causes of False-positive Tests for Syphilis

Nontreponemal Tests

Infectious Causes

Pneumococcal or mycoplasmal pneumonia
Scarlet fever
Leprosy
Lymphogranuloma venereum (LGV)
Relapsing fever
Bacterial endocarditis
Malaria
Rickettsial disease
Psittacosis
Leptospirosis
Chancroid
Tuberculosis
Trypanosomiasis
Vaccina (vaccination)
Chickenpox
HIV infection
Measles
Infectious mononucleosis
Mumps
Viral hepatitis

Noninfectious Causes

Pregnancy
Chronic liver disease
Advanced cancer
Intravenous drug use
Multiple myeloma
Advancing age
Connective tissue disease
Multiple blood transfusions

Treponemal Tests

Infectious Causes

Lyme disease
Leprosy
Malaria
Infectious mononucleosis
Relapsing fever
Leptospirosis

Noninfectious Causes

Systemic lupus erythematosus

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Thrombocytosis in Pregnancy

- A. Definition: Platelet count $>400,000 / \text{mm}^3$
 - 1. Definition by 2-standard deviations from mean thus means that 2.5% of patients will have elevated platelets
 - 2. Counts $>500,000 / \text{mm}^3$ more specific

Sequelae of thrombocytosis: Stroke, when platelets $>1,000,000 / \text{mm}^3$

- B. Differential diagnosis: Reactive Thrombocytosis (RT) vs. Essential Thrombocythemia (ET)
 - 1. RT: due to inflammation, infection, bleeding, iron deficiency, recent surgery, alcohol
 - a. may be responsible for $>85\%$ of cases (1)
 - 2. ET: chronic myeloproliferative disorder (incl. polycythaemia vera and myelofibrosis)
 - a. May have microvascular symptoms including headache, lightheadedness, paresthesias, erythromelalgia (burning, warmth, redness of extremities).
 - b. Paradoxical predisposition to both bleeding and thrombotic complications, with potential transformation into acute myeloid leukemia
 - c. Must consider if platelets $>600,000 / \text{mm}^3$, or persistent thrombocytosis
- C. Pregnancy implications:
 - 1. RT: generally none
 - 2. ET: Data from ref. (2)
 - a. 43% SAB (most in first trimester)
 - b. 3rd Trimester: IUFD 5%, PTB 8%, IUGR 4%
 - c. Maternal bleeding 5% (most minor)

D. Management:

- 1. Platelets $<450 / \text{mm}^3$: considered within normal limits
- 2. Platelets $450-600 / \text{mm}^3$:
 - a. Obtain Hx of risk factors for RT (see above)
 - b. Repeat CBC with peripheral smear (for platelet morphology, & to r/o spurious thrombocytosis)
 - c. Also order serum Iron Studies: ferritin, iron, total iron binding capacity (TIBC)
 - i. 1st Trimester: order labs within 1-2 weeks (highest risk for SAB)
 - ii. 2nd & 3rd Trimesters: order labs in 1 mo.
 - d. If diagnostic of iron deficiency anemia, treat with iron per anemia protocol and repeat CBC with iron studies.
 - e. Refer to High-Risk OB if any of the following:
 - i. Repeat platelets $>600,000 / \text{mm}^3$
 - ii. Iron studies normal
 - iii. Any persistent thrombocythemia after iron studies normalize
 - iv. Abnormal platelet morphology
- 3. Platelets $>600,000 / \text{mm}^3$
 - a. Order labs as above, AND
 - b. Refer to High-Risk OB
- 4. Platelets $>1,000,000$

- a. Consult Hematology on-call (same-day)

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Thyroid Function and Disease in Pregnancy

A. Normal changes in pregnancy

1. Increase in serum thyroxine-binding globulin (TBG) concentrations
 - → increase is due to estrogen
 - → leads to an increase in both serum total T4 and T3, but not serum free T4 and free T3
2. Stimulation of the thyrotropin (TSH) receptor by hCG
 - → weak effect which results in slight increase in free T4 and free T3, but
 - still within normal range
 - → also have slight decrease in TSH level
 - → occurs within first 12 weeks of pregnancy
3. Mild thyromegaly is a normal finding in pregnancy
4. hCG also stimulates the thyroid

B. Clinical implications in pregnancy

1. Hyperemesis gravidarum: many women with this condition have subclinical or mild overt hyperthyroidism, which resolves with the hyperemesis and rarely requires antithyroid treatment
2. Routine measurement of thyroid function are not recommended in women with hyperemesis gravidarum unless other overt signs (other than N/V) of hyperthyroidism are evident
3. Trophoblastic hyperthyroidism: often occurs with molar pregnancy
4. Transient subclinical hyperthyroidism occurs in 10-20% of normal pregnant women and does not require treatment.

Hyperthyroidism (Thyrotoxicosis)

A. Definitions

1. Grave's Disease: Most common cause of hyperthyroidism. It is an autoimmune disease characterized by production of thyroid stimulating immunoglobulin (TSI) and thyroid stimulating hormone binding inhibitory immunoglobulin (TBBI) that act on the TSH receptor and stimulate the thyroid. Grave's disease accounts for 95% of cases of hyperthyroidism
2. Thyroid storm: severe, acute exacerbation of s/sx of hyperthyroidism

B. Pregnancy Implications

1. SAB
2. PTL
3. Low birth weight
4. Stillbirth
5. Preeclampsia
6. Heart Failure

C. Signs and Symptoms

1. Nervousness, anxiety, irritability
2. Increased number of bowel movements
3. Weight loss
4. Nausea and vomiting
5. Palpitations
6. Trouble sleeping
7. Excessive sweating

8. Heat intolerance
9. SOB/dyspnea
10. Tremor
11. Hypertension
12. Exophthalmos
13. Goiter
14. Sinus tachycardia

D. Diagnosis

1. Serum TSH value <0.01 mU/L and a high serum free T4 value
2. Free T3 measurements may be useful in women with suppressed serum TSH concentrations and normal or minimally elevated free T4 values

E. Management

1. Clients with lab evidence of hyperthyroidism who are asymptomatic may be managed collaboratively by CNMs and MDs in CNM High Risk Clinic
2. Otherwise transfer to MD caseload
3. Treatment options for pregnant women are limited because therapy may be harmful to the fetus
4. ***It is very important to communicate the presence of maternal thyroid disease to the Pediatric team ***

Hypothyroidism

A. Pregnancy implications-increased risk of

1. Preeclampsia and gestational hypertension
2. Placental abruption
3. Non-reassuring FHR tracing
4. Preterm birth
5. Cesarean birth
6. Perinatal morbidity and mortality
7. Postpartum hemorrhage
8. Low birth weight
9. Neuropsychological and cognitive impairment

B. Signs and symptoms:

1. Dry, coarse skin
2. Cold intolerance
3. Hair loss or thin hair
4. Hoarse voice
5. Brittle nails
6. Delayed reflexes
7. Goiter
8. Weight gain
9. Fatigue, lethargy, weakness
10. Menstrual irregularities (for this reason we won't see too many women with this condition, also associated with high rate of first trimester miscarriage)

C. Etiology

Hashimoto's disease (most common etiology in developed countries, characterized by production of antithyroid antibodies, associated with goiter), thyroidectomy, radioactive iodine treatment, iodine deficiency (most common etiology in developing countries, associated with goiter, hypothalamic dysfunction)

D. Screening

1. Should be done for women with a personal history of thyroid disease, goiter, or with symptoms> For women with a hx of hypothyroidism and a normal first TSH, repeat TSH q trimester, as her previous hypothyroidism may be related to immune state.
2. It is not necessary to obtain TFTs in asymptomatic pregnant women with a mildly enlarged thyroid
3. For screening, only send a TSH – FT4 in pregnancy is not reliable

E. Diagnosis

- Elevated TSH
- Normal values: First trimester: 0.1-2.5
- Second trimester: 0.2-3.0
- Third trimester: 0.3-3.0

F. Management

Any patient with TSH >3.0 should be referred to HROB

Levothyroxine at sufficient levels to normalize TSH levels. Treatment is the same as in non-pregnant women.

Levothyroxine takes approx 4 weeks to alter TSH levels, so therapy should be adjusted at 4-6 week intervals until TSH levels are stable.

1. Data indicate pregnancy increases maternal thyroid hormone requirements in women with hypothyroidism diagnosed before pregnancy, up to 50%
2. Generally, dose is increased by 30% with further dose changes based upon serum TSH concentrations
3. Consult in HROB clinic
4. In stable patients, ACOG recommends checking TSH levels every trimester in women with hypothyroidism
5. Levothyroxine doses can be reduced to prepregnancy levels after delivery, but serum TSH should be measured 4-6 weeks later to confirm that the reduction was appropriate
6. ***It is very important to communicate the presence of maternal thyroid disease to the Pediatric team ***

Thyroid Nodules

A. Incidence

1. Incidence of thyroid cancer in pregnancy is 1 per 1,000

B. Management

1. Any nodule should be diagnostically evaluated (FNA biopsy), as 40% will be malignant
2. Order TSH and FT4
3. Refer to HROB clinic
4. Benign nodules are followed expectantly. Nodules that enlarge in pregnancy should be re-biopsied

Postpartum Thyroiditis

A. Definition

An autoimmune inflammation of the thyroid gland that presents as new onset, painless hypothyroidism, or transient thyrotoxicosis followed by hypothyroidism within one year

B. Incidence

1. Occurs in 5% of women who do not have a history of thyroid disease

2. 70% risk of recurrence

C. Diagnosis

1. Made by documentation of new onset abnormal levels of TSH or FT4 or both
2. Postpartum women who develop a goiter or who develop hypothyroid or hyperthyroid symptoms should have TSH and FT4 levels drawn
3. In a woman with postpartum depression, screen for other signs and symptoms of thyroid disease and consider labs

D. Management

1. The need for treatment varies, more likely if hypothyroidism present. Consultation with OB is warranted

Subclinical Hypothyroidism

A. Definition: elevated TSH with normal FT4 in an asymptomatic patient

Some observational data may indicate that neuropsychological performance in the offspring of hypothyroid women is decreased. However, per ACOG and most professional societies it is premature to recommend universal screening for hypothyroidism during pregnancy, in asymptomatic women. Up to Date recommends universal screening

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Revised 07/2008, 08/2009, 01/2018

Trichomonas

A. Definition:

Trichomonas Vaginalis is a motile protozoan with an undulating membrane and flagella which is a parasite of the genitourinary tract. It is almost always sexually transmitted. The incubation period ranges from 4-28 days.

B. Clinical Implications in Pregnancy:

1. Trichomonas has a strong association with other sexually transmitted infections.
2. It is associated with PROM and preterm birth, however, treatment of asymptomatic infections has not been shown to decrease these complications.
3. It may cause a friable cervix and spotting or bleeding during pregnancy.

C. Signs and Symptoms: 50% of women are asymptomatic.

1. The classic frothy/watery yellow-green is seen in only 10% of the cases
2. Thin purulent malodorous discharge is seen in about 70% of the cases
3. Vulvar irritation and pruritis
4. Possible tender inguinal nodes
5. Dysuria
6. Dysparunia

D. Objective Findings:

1. PE:
 - a. Vulva: erythema
 - b. Vagina: diffuse or frothy yellow-green or purulent malodorous discharge
 - c. Cervix: strawberry cervix, friable
 - d. Uterus/adnexa: non-tender, not enlarged
2. LAB:
 - a. Normal saline wet mount:
 - b. Trichomonads
 - c. Increased WBC's
 - d. Lactobacillus present
3. Ph >4.5

E. Diagnostic Criteria:

1. Normal saline wet mount with trichomonads
2. Pap with trichomonads has a high false positive rate, therefore is not diagnostic.
 - a. With prevalence of 5% PPV=70%; <5% PPV<70%
 - b. If prevalence >5% treat or confirm
 - c. If <5% confirm

F. Management/Treatment:

Diagnostic: Check for other STI's as needed.

Treatment:

1. Metronidazole (Flagyl) 2 gm PO stat and same treatment for all partners. (97% cure rate) In pregnancy: 2 gm single dose preferred to give in 2nd trimester (safety of Flagyl in first trimester well documented, delay related to increased risk of SAB in first trimester-not related to Flagyl and theoretic risk)
2. If is treatment concurrent with BV give 500 mg one PO BID x 7 days
3. For treatment failure use:

- a. Metronidazole 500 mg one PO BID x 7 days
- b. Metronidazole 2gm QD 3-5 days OR
- c. Metronidazole 2 gm PO stat

Education: STI/HIV/safer sex, hygiene, TX partner, No ETOH with metronidazole

Follow-up:

1. Return only if continues to be symptomatic or fears reinfection
2. *No TOC necessary*

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Transfusion History

Management

1. Discuss the events surrounding the transfusion, including the year and location women was transfused and document in the chart
2. Assess if there is any family history of prolonged bleeding
3. Assess risk for bleeding
4. If high risk for bleeding, discuss plan in labor and delivery to minimize bleeding and need for transfusion
5. Discuss the transmission of blood-borne disease through transfusion
6. Offer Hep C testing
7. Re-offer HIV testing if she has declined and document in the chart
8. Consider HROB consult if any suggestion of personal or familial bleeding disorder

Tuberculosis

Note: you can no longer refer patients to the ZSFG TB Clinic for treatment of latent TB! Only make referrals there for abnormal chest x-rays and/or symptomatic patients.

Latent TB is treated at primary care clinics in the SFHN. If a patient with latent TB has a primary care clinic/provider, counsel her to obtain an appointment during the early postpartum period for treatment. Patients without an established clinic should be referred to primary care using the e-referral system. Please be sure to include a working phone number for the patient with the e-referral. Note: women who have pregnancy-only Medi-Cal will be enrolled in Health San Francisco and this will cover treatment.

For more detailed information see Appendix G.

Ultrasound Findings
Common Abnormalities Detected on Fetal Ultrasound
Implications and Follow-up

Choroid Plexus Cysts:

- A. Definition/Incidence: Choroid Plexus Cysts are small cystic areas in the choroid plexus. The choroid plexus is spongy tissue in the ventricle of the brain. The choroid plexus produces cerebrospinal fluid. Choroid plexus cysts are found in up to 2% of normal pregnancies and most cases resolve by the third trimester.
- B. Implications:
 - 1. 30-50% of cases of Trisomy 18 will have choroids plexus cysts although only 2-6% of fetuses with choroids plexus cysts will have Trisomy 18.
 - 2. Trisomy 18 is the second most common multiple malformation syndrome associated with autosomal trisomy (1/3000-5000) and most of these infants will not live past 1 year, all will be profoundly mentally retarded.
- C. F/U:
 - 1. Send for quad marker screen (if not already done and within the correct time frame).
 - 2. Trisomy 18 is very easy to identify in the fetal survey of an ultrasound due to the myriad of anomalies. Therefore if pt has not had an ultrasound at greater than 18 weeks it should be scheduled.
 - 3. If ultrasound is suggestive of trisomy 18 a level II ultrasound should be scheduled and amnio may be done to confirm.
 - 4. If a choroid plexus cyst is an isolated finding, the risk of Trisomy 18 is 1/374, so additional tests are unwarranted.

Cleft Lip/Palate:

- A. If diagnosed, refer patient to the PDC for counseling and for referral to UCSF Craniofacial Clinic (see Prenatal Diagnosis for info on how to refer to the PDC). Also, refer for a Lactation Consultation during the prenatal period by calling 206-MILK.

Echogenic Intracardiac Focus:

- A. Definition/Incidence: A finding that is correlated with calcification of fetal papillary muscle. Found in about 7% of ultrasounds at 13-16 weeks and about 3% at 20-22 weeks. (The incidence is as high as 30% in Asians)
- B. Implications:
 - 1. Echogenic intracardiac focus is noted to be present in 25% of Downs Syndrome fetuses and 4-7% of normal fetuses.
 - 2. The risk of Downs Syndrome in a fetus with echogenic intracardiac focus is about .002% (Achiron et al,1997)
 - 3. The clinical significance is unclear and there have been some reports (not all) of an association with Trisomy 21.
 - 4. The best available evidence suggests that an isolated echogenic intracardiac focus in the fetus of an otherwise low risk woman does not confer an increased risk of fetal aneuploidy.
- C. F/U:
 - 1. Karyotyping is not warranted. The risk of amnio far outweighs the risk of Downs in a low risk population.

2. Usually resolve spontaneously and fetuses are born normal.
3. Pt may choose to have quad marker screen.
4. Patients may be referred to genetics for counseling if exceptionally anxious about this finding.

Renal Pelviectasis/Pyelectasis:

- A. Definition/Incidence: A mild dilation of the fetal renal pelvis. It has been defined as >4mm before 33 weeks or > 7mm after 33 weeks. It is found in approximately 2% of normal fetuses.
- B. Implications:
 1. Pelviectasis/Pyelectasis can sometimes be associated with obstruction and can lead to hydronephrosis.
 2. The severity of pyelectasis may predict the development of hydronephrosis and possible postnatal complications. In studies pelviectasis <10mm was associated with 90-98% postnatal resolution.
 3. While not an independent predictor, pyelectasis has also been found to be present in 15-25% of fetuses with trisomy 21 (Downs).
 4. Other reasons that lead to hydronephrosis are: physiologic, ureteropelvic junction obstruction, vesicoureteral reflux, multiplastic kidney, posterior urethral valves, ureterocele/ectopic ureters and prune belly syndrome (but, it's probably physiologic).
- C. F/U:
 1. A follow-up ultrasound should be done in 6-8 weeks from the first to assure that there is not an obstruction and hydronephrosis is not developing. Often the pelviectasis/pyelectasis will have spontaneously resolved at this point.
 2. If pelviectasis/pyelectasis is still present but less than 6mm the baby will be followed with ultrasounds > 48 hours after birth and at 3 months and after that as needed.
 3. If it is greater than 6mm the baby will be put on prophylactic antibiotics and be followed with an ultrasound in 48 hours.
 4. Depending on the result, the baby may need additional testing and continued antibiotics. It usually resolves spontaneously by 3 months.

2 Vessel Umbilical Cord

- A. Definition/Incidence: An umbilical cord that is found to have one artery and one vein. It is believed to be caused by atrophy of a previously normal artery. It occurs in approximately 1% of singleton pregnancies and 5% of multiple gestations. It has a higher incidence in Caucasian women than African American or Asian women.
- B. Implications: Approximately a 25% risk of fetal defects including cleft lip, cardiovascular, CNS, bowel and renal. There is an increased risk of preterm birth (20%) and higher perinatal mortality rates.
- C. F/U: Level II ultrasound to r/o anomalies. With normal level II findings prognosis is very good. No follow-up or ANT needed.

Echogenic Bowel

- A. Definition/Incidence: Echogenic bowel refers to bowel echogenicity that is as bright as bone on ultrasound.
- B. Implications:
 1. Echogenic bowel is associated with aneuploidy (5%), cystic fibrosis, CMV and other TORCH infections (15-20%) and also meconium peritonitis, meconium ileus or intestinal malrotation (these are often related to the previous diagnoses).

2. At least 50% of fetal echogenic bowel is associated with a normal outcome at birth.

C. F/U:

1. Refer to genetic counseling.
2. Consider CF screening.
3. May draw serum CMV titers (IgG and IgM).
4. Notify pediatricians in L&D

Nuchal Thickening

- A. Definition/Incidence: Nuchal Translucency is a measurement done at the base of the head in the posterior neck. It is most commonly done as part of prenatal screening program between 11+2-14+2 wks when screening for aneuploidy. It can be distorted by the angle of the ultrasound transducer.
- B. Implications: Associated in particular Trisomy 21 (Downs) and may be present in Trisomy 18. Even in the absence of aneuploidy increased fetal nuchal translucency has been shown to be a marker for fetal heart malformations and numerous other fetal defects and genetic syndromes when the measure is $\geq$ 95th centile
- C. F/U: If positive: Quad marker screen, genetic counseling and eligible for genetic testing (amnio or CVS). Fetal echocardiogram if genetic testing wnl.

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Ultrasound Scheduling

1. Use the e-referral system (LCR) to order ultrasounds
2. If you are seeing a patient for whom an u/s has been ordered but there is no appointment scheduled, call (or have another staff person call) radiology at 6-4147 and with the patient present make the appointment.
3. It is also an option to send a patient to the radiology window on the first floor for her appointment. They will look her up in the system and as long as an e-referral has been placed, should be able to give her an appointment in the moment.
4. For urgent add ons after 3:30 pm (same day sonos) you can place the e-referral and then either call or go down to US and ask for the appointment.
5. Please schedule OB US (level 1s and level 2s) between 18-21 weeks. If patients are obese, please favor 20-21 weeks as it is very difficult to assess the anatomy earlier.
6. If the patient is not interested in expanded genetic screening, a Level 2 ultrasound is a POOR replacement for screening for chromosomes abnormalities. Not only this is a poor utilization of resources, it also provides a false sense of reassurance.

URI – Upper Respiratory Infections (see also Appendix G)

- A. Definition: The common cold. Infection of the upper respiratory tract (nasal and oropharynx) most can be caused by one of 200 different viruses (including: rhinovirus, adenovirus, respiratory syncytial virus, influenza, parainfluenza)
 - B. Clinical Implications for Pregnancy
Most often self-limiting without any serious implications, however, it is important to be aware of possible bacterial causes (mycoplasma and chlamydia). Most colds resolve in a week, although symptoms may linger for several weeks
 - C. Differential Diagnosis
Common Cold
 - 1. Signs and Symptoms
 - a. Erythematous pharynx, usually without exudate
 - b. Nasal turbinates erythematous and slightly edematous
 - c. Bilateral nasal discharge, usually thin, clear-white
 - d. Cough
 - e. Watery eyes
 - f. Sneezing
 - g. Headache
 - h. Malaise
 - i. Fever *
 - j. Lymphadenopathy, usually minimal
 - 2. Diagnosis: clinical
 - 3. Treatment: Supportive care as described below
- * if PPD+, you must rule out TB with CXRAY

Allergic Rhinitis

- 1. Signs and Symptoms
 - a. Eyes often watery, itchy and puffy
 - b. Nasal turbinates pale and grayish
 - c. Symptoms are a seasonal pattern
 - d. Wheezing
 - e. Sinusitis
 - f. Severe cold symptoms that last longer than 10 days without improvement
 - g. Nasal discharge usually unilateral
 - h. Cough during the day, but worse at night
 - i. Associated with face pain
 - j. Sore throat occurs secondary to mouth breathing
- 2. Diagnosis: clinical
- 3. Management:
 - a. Supportive care as described below
 - b. Can consider microbial treatment if symptoms persist more than 1 week with a 10 to 14 day course of amoxicillin (500 mg three times a day) for its narrow spectrum, relatively low cost, and low side-effect profile
 - c. Trimethoprim-sulfamethoxazole and macrolides are cost-effective acceptable alternative first-line therapies in penicillin allergic patients

Sinusitis (Can be bacterial or viral)

1. Signs and symptoms
 - a. No other distinguishing symptoms aside from signs and symptoms of the common cold
 - b. Can have face pain, especially when bending forward, but often not
 - c. Purulent nasal drainage
2. Diagnosis: clinical
3. Management:
 - a. Supportive care as described below
 - b. Can consider microbial treatment if symptoms persist more than 1 week with a 10 to 14 day course of amoxicillin (500 mg three times a day) for its narrow spectrum, relatively low cost, and low side-effect profile
 - c. Trimethoprim-sulfamethoxazole and macrolides are cost-effective acceptable alternative first-line therapies in penicillin allergic patients
 - d. "2008 meta-analysis based on individual patient data (n = 2547) from 9 randomized trials found that 15 patients with rhinosinusitis would need to be treated with antibiotics before one additional patient would be cured." (Young et al, 2008)

Influenza (Caused by many different strains of the influenza virus) *Please see appendix for information on H1N1

1. Signs and Symptoms (few days incubation period)
 - a. Fever *
 - b. Myalgias
 - c. Headache
 - d. Malaise
 - e. Cough
 - f. Sore throat
2. Diagnosis: clinical, viral culture or rapid test using throat swab or nasal wash
3. Treatment
 - a. Antivirals, such as Tamiflu, are given to those at risk for influenza related complications (not our population for the most part). Though, resistance is now being seen.
(<http://www.cdc.gov/flu/professionals/flu>)
 - i. if PPD+, you must r/o TB with CXRAY

NOTE: Any pregnant woman with URI symptoms AND fever OR difficulty in breathing should be sent to urgent care for further evaluation.

Bacterial Pharyngitis (most commonly caused by Group A strep; less likely Epstein Barr virus/ mononucleosis)

1. Signs and Symptoms
 - a. Scarlet rash on throat (strep)
 - b. Sore throat, headache and fever usually not associated with rhinorrhea, cough or watery eyes
 - c. Tonsillar exudates
 - d. Fever
 - e. Tender cervical adenopathy
2. Diagnosis:
 - a. Throat culture (See Figures 1 and 2 below)
 - b. Mono spot test (blood test)
3. Treatment For Strep A:
 - a. Penicillin 1.2 million units IM x1
 - b. Amoxicillin (Amoxil, Trimox) 500-875 mg PO q12h
 - c. Azithromycin (Zithromax) 500 mg PO x1 on day 1; 500 mg PO daily x3 days

- d. Clarithromycin (Biaxin) 500-875 mg PO q12h
- e. Cephalosporin (Keflex) 1-4 g/day PO div bid-qid x7-14 days

Figure 1. Centor Clinical Prediction Rule for the Diagnosis of Strep Throat in Adults

1. Assign 1 point for each of the following clinical characteristics: (1) history of fever, (2) anterior cervical adenopathy, (3) tonsillar exudates, and (4) absence of cough.
2. Find the column that most closely matches the pretest probability of strep in the patient and look down the column to the row that matches the patient's number of points to determine the probability of strep.

Points, No.	Likelihood Ratio	Pretest Probability of Strep Throat (%)							
		5	10	15	20	25	40	50	
0	0.16	1	2	2	3	5	10	14	
1	0.3	2	3	5	7	9	17	23	
2	0.75	4	8	12	16	20	33	43	
3	2.1	10	19	27	34	41	58	68	
4	6.3	25	41	53	61	68	81	86	

Figure 2. McIsaac Modification of the Centor Strep Score

1. Add Up Points for Patient Symptoms or Sign

	Points
History of Fever or Measured Temperature >38°C	1
Absence of Cough	1
Tender Anterior Cervical Adenopathy	1
Tonsillar Swelling or Exudates	1
Age <15 y	1
Age ≥45 y	-1
2. Find Risk of Strep

Points, No.	Likelihood Ratio	% With Strep (Patients with Strep/Total)
-1 or 0	0.05	1 (2/179)
1	0.52	10 (13/134)
2	0.95	17 (18/109)
3	2.5	35 (28/81)
4 or 5	4.9	51 (39/77)

Pertussis

1. Signs and symptoms
 - a. Runny nose
 - b. Sneezing
 - c. Low grade fever*
 - d. Cough, similar to the common cold.
 - e. After 1-2 weeks, may progress to stage characterized by bursts of numerous rapid coughs (paroxysms)
2. Diagnosis: Nasopharyngeal swab
3. Management: Consult. FYI Treatable with antibiotics and this is a reportable illness (<http://www.cdc.gov/vaccines/vpd-vac/pertussis>)
 - * if PPD+, you must r/o TB with CXRAY

Pneumonia (Which is actually a lower respiratory infection)

1. Pathogens
 - a. Typical" organisms include *S. pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, Group A streptococci, *Moraxella catarrhalis*, anaerobes, and aerobic gram-negative bacteria.

- b. "Atypical" refers to pneumonia caused by *Legionella* spp, *Mycoplasma pneumoniae*, *Chlamydia* (formerly *Chlamydia*) *pneumoniae*, and *C. psittaci*

2. Signs and symptoms

- a. Chest pain
- b. Shortness of breath, pain with breathing
- c. Tachypnea
- d. Tachycardia
- e. Nausea
- f. Vomiting
- g. Diarrhea
- h. Cough that produces green or yellow or rust colored sputum
- i. Most people have fever (temperature greater than 100.5°F or 38°C)
- j. Chills/rigors
- k. Change in mental status (confusion, unclear thinking) can occur.

3. Diagnosis: CXRAY

4. Management: Consult, antibiotics
(UpToDate, 2008)

D. Supportive Care

1. Therapeutic

- a. Increase fluids to thin secretions
- b. Rest
- c. Steam for congestion
- d. Salt water gargles for sore throat
- e. Vicks vapor rub topically or in vaporizer
- f. Eucalyptus or tea tree oil for congestions
- g. Peppermint or dandelion root tea for sinus congestion

2. RX

- a. Tx fever with Tylenol 650 mg po q4 hours prn
- b. Echinacea is safe to use in pregnancy
- c. Pseudoephedrine HCL 30-60mg po q4-6 hours prn (not to exceed 240 mg total dose in 24 hours) for nasal drainage
- d. Antihistamines for relief of allergic rhinitis with Chlorpheniramine 4mg-8mg po BID or TID or Diphenhydramine 25mg po BID or TID
- e. Robitussin for cough
- f. Vit C therapy
- g. RX Antibiotics should only be considered to treat diagnosed bacterial infection or symptoms such as otitis or sinusitis

3. Education

- a. Avoid dairy products due to mucous producing quality
- b. Good handwashing and proper disposal of nasal secretions
- c. Discuss lack of utility of using antibiotics for viral infections
- d. Patient should contact her provider if symptoms of secondary bacterial infection occur (persistent or rising fever after initial 2-3 days, sinuses become tender, URI signs and symptoms beyond 14 days)

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Revised 09/2009

Urinary Tract Infections

A. Definition:

A urinary tract infection (UTI) is a bacterial infection of the urinary tract, which includes the urethra, the urinary bladder, the ureters, and the kidneys. A UTI is caused by bacteria normally found in the vagina, rectum and anterior urethra ascending into the bladder and sometimes up the urinary tract.

1. 3 categories: Asymptomatic bacteriuria (ASB), cystitis, pyelonephritis

2. Clinical Implications in Pregnancy

- UTI is the most common medical complication of pregnancy
- ASB and pyelonephritis are associated with increased risk of preterm birth, low birth weight.
- Pregnancy does not cause major increase in bacteriuria but it does predispose to the development of acute pyelonephritis.

3. ASB (Asymptomatic Bacteruria)

S/SX: Asymptomatic

Incidence: 2-10%

- Most research shows that patients with ASB will have a positive culture at the initial screening.
- Relatively few (1-1.5%) will acquire bacteriuria later in pregnancy if the initial screen was negative.
- 5X more common in women of low socioeconomic status.
- Approximately 20-40% of women with untreated ASB will develop pyelonephritis.

4. Cystitis

S/SX: Urinary urgency and frequency, dysuria, suprapubic tenderness, occult hematuria, abdominal cramping

Incidence: 1-4%

- 64% of those who develop cystitis had negative cultures on initial screening
- Cystitis does not increase the risk for preterm birth, low birthweight, and acute pyelonephritis. The only morbidity associated with it is discomfort.

5. Pyelonephritis:

S/SX: possible symptoms of cystitis with fever, chills, flank pain, CVAT (generally worse on right side), maternal and fetal tachycardia, nausea and vomiting

Incidence: 1-2%, most frequent at end of 2nd trimester or beginning of 3rd trimester

B. Diagnostic Criteria

1. Urine Culture and Sensitivity: Presence of any e-coli or >100,000 colonies/ML of other uropathogenic organisms on a clean catch specimen. If patient is symptomatic >1,000 colonies/ML.

Urinary Pathogens	
Gram negative (95% of all UTI's)	Gram positive
- e.coli, (90%) - kelbsiella pneumoniae - citrobacter - proteus mirabilis - pseudomonas - enterobacter aerogenes	- enterococcus - staphylococcus saprophyticus - coagulase-negative staphylococcus - group B strep

Contaminants
• Lactobacillus → likely protective against UTI, no treatment needed • Strep viridans: Generally found in the oropharynx or GI tract, normal flora of skin. There are no documented sources stating what to do if this is found in a clean catch. Per Deb Cohen, MD do the following → if asymptomatic: and greater than 105, treat with amoxicillin and less than 105, no need to treat → if symptomatic and at least 105, treat with amoxicillin *another reasonable option: repeat urine C&S • Staph (other than those above) • Mixed gram positive (more than one species) suggests contamination (a pathogen will grow out on it's own through the contamination)

2. Urine Macroanalysis (dipstick not diagnostic): presence of hematuria, proteinuria, leukocyte esterase, or nitrites can raise suspicion of the presence of UTI, but is not diagnostic.
Nitrites are produced by breakdown of urinary nitrates by gram-negative bacteria. This is highly specific, but not very sensitive (therefore if positive nitrites you probably have a UTI, but if negative you may still have one). Requires >4 hrs of urine contact with high concentrations of bacteria to give positive result.
Leukocyte esterase: this is highly sensitive, but not very specific (therefore if negative there's a good chance that there is no UTI, but a high false positive rate)
3. Urine Microanalysis (microscopic exam-not Diagnostic): detects bacteria (>1/hpf suspicious of UTI), RBC's, epithelial cells (indicative of contamination), WBC's (>10/hpf suspicious for UTI)

C. Management/Treatment

Diagnostic

1. Indications for Screening: a clean catch urine for microscopic exam and/or C&S may be indicated for one or a combination of the following:
 - a. Initial prenatal screening
 - b. Current urinary tract symptoms
 - c. Past history of recurrent urinary tract infections
 - d. Current urine macro with: hematuria, proteinuria, leukocytes and/or nitrites
 - e. Post treatment as a test of cure
 - f. History of predisposing risk factors: chronic anemia, anatomic or functional abnormalities of the urinary tract, sickle cell trait/disease, diabetes, G6PD deficiency, hx pyelo
 - g. If pt has >105 mixed gram positive bacteria (contaminated sample) and provider suspicious of UTI.

NOTE: When sending a C+S for a patient who is PCN allergic (anaphylaxis or angioedema), please note this is the pt hx box on the form.

**The SFGH lab does not routinely run nitrofurantoin sensitivities with urine C&S, so if you want this, you must request it on the lab slip.

- 1) If urinary tract infection is identified check for s/sx of pyelonephritis and patients drug allergies.
- 2) Patients with UTI on initial screening should have urine culture screening each trimester.
- 3) Consult with suspicion of pyleo (+ CVAT, chills and/or T > 38.0).

Therapeutic

1. Treat with appropriate Antibiotic therapy based on sensitivities, compliance and cost:
 - Ampicillin 500 mg 1 po QID X 3D
 - Amoxicillin 500 mg 1 po TID X 3D

Bactrim/Septra DS (Trimethoprim-sulfamethoxazole) 1 po BID X 3D (avoid in the 1st trimester)

Keflex (Cephalexin) 500 mg 1 po QID X 3D (updated-2015)

Macrobid* (Nitrofurantoin) 100 mg 1 po BID X 7D (use with caution after 36 wks related to increase in treatment for jaundice in newborns 10.8% vs 8.1% see notes below re: first tri use)

Macrochantin (Nitrofurantoin) 100mg PO QID x 7D (caution after 36 wks for UTI treatment)

a. If organism or sensitivities are unknown:

i. Macrochantin or Macrobid

ii. Septra DS (TMP-SMZ) (avoid in the 1st trimester)

iii. Keflex (cephalexin)

b. Specific organisms:

- staph saprophyticus: not covered by nitrofurantoin
- GBS: Ampicillin or Amoxicillin
- enterococcus: Ampicillin, Amoxicillin or nitrofurantoin
- e-coli: avoid Septra and Ampicillin due to high resistance (unless you have sensitivities)

2. Those patients with severe dysuria may be given Pyridium 200 mg P.O. TID after meals x 3 days.

3. Mixed Gram Positive Bacteria: >10⁵ mixed gram-positive bacteria is a sign of contamination in the sample. No treatment or repeat culture is necessary unless the patient is symptomatic. If symptomatic then repeat the clean catch to confirm UTI and pathogen. Consider presumptive treatment if highly suspicious.

4. Group Beta Strep:

- If no symptoms noted at time of visit and <100,000 col/ml defer treatment until delivery.
- Note GBS positive on problem list with a "to do" item of treat in labor for any GBS in urine.
- If symptomatic and >10² col/ml treat with Amoxicillin 500mg TID x 3-7 days and note on problem list with a "to do" item of treat in labor.

5. For patients on Antibiotics (especially Ampicillin): health education re: possibility of candidal vaginitis. May offer prophylactic clotrimazole and/or prevention strategies i.e. yogurt tampons, Fem-dophylus (probiotic).

6. For patients with recurrent postcoital infections, consider prophylaxis with a single post-coital dose of cephalexin or nitrofurantoin.

7. If the woman has conditions that potentially increase the risk of urinary complications during episodes of UTI (e.g. diabetes) suppressive therapy should be considered after the first UTI during pregnancy (*Up-to-Date*). Sickle trait is not associated with increased UTI's (Thurman, 2006)

8. For treatment questions: Consider consult with Reproductive ID Fellow: Pager 443-2847

D. Education

Educate re: hydration, hygiene, clothing, no douching, regular voiding, void after intercourse, drinking acidic beverages (unsweetened cranberry juice decreases the adherence of bacteria to lining of bladder and urethra), stress, antibiotic instructions and possibility of yeast infection.

Cranberry juice: Regular intake of unsweetened cranberry juice or cranberry capsules has been shown reduce the incidence of UTIs, and especially to reduce likelihood of recurrence. You don't have to drink a lot of cranberry juice to get this effect. The dose is approximately 10 ounces a day of cranberry juice (probably best to do this divided into two doses) or one cranberry extract tablet (300-400 mg) BID.

E. Follow-Up

1. Any patient with a documented UTI should have a test of cure (TOC) after treatment.

2. If patient has a positive TOC:

- a. Persistent Infection (unresolved) secondary to inadequate RX, wrong antibiotics, taken improperly...retreat then TOC

- b. Reinfection (this means the patient was treated and had a positive TOC but with a new organism, or the same organism but with a strong suspicion of adequate treatment): treat then TOC and suppression with Macrochantin 100mg Q HS until birth.
 - c. Relapse (TOC still positive with the same organism): the choice of antibiotics was correct and taken correctly, but inadequate to suppress infection. Treat (consider longer treatment or other antibiotics), TOC, then periodic C&S vs suppression. This pt may have underlying kidney disease. If persistent relapse, get serum creatinine and maternal renal ultrasound and consider high risk clinic consult
3. Patients with documented UTI and treatment should be screened each trimester with a urine culture (often TOC is second trimester screen).
4. Repeat UTI: Patients who have an adequately treated UTI in pregnancy and then have a subsequent UTI should be treated for this infection, and after a TOC be started on suppression therapy:
 - a. Suppression: Macrochantin 100mg Q HS until birth.

**Notes on use of Nitrofurantoin (macrochantin):*

- *In the first trimester: There has been some recent literature with concern with first trimester exposure of subsequent craniosynostosis, oral cleft or cardiovascular defects, these were not substantiated in further studies or meta-analysis (Goldberg, 2015). There may be an association between nitrofurantoin and a rare birth defect, hypoplastic left heart syndrome although mostly related to one study (Crider, 2009) that asked women who had birth defects to recall medications taken (possible recall bias).*
- *In late 3rd trimester: One study (Nordeng, 2013) has shown an increased risk of need for treatment for jaundice (10.8 vs 8.1%) with use in the last 30 days. There is no evidence of hemolytic anemia and the paper was a retrospective study without adjustment for other common causes of jaundice. Because of this the SFGH RID faculty feels the risks of pyelo outweigh the increased risk of neonatal jaundice that this paper shows.*

Pyelonephritis

If patient has a diagnosis of acute pyelonephritis, consult for treatment and care. After treatment patient should receive suppression with Macrochantin 100mg PO QHS (preferred) or Cephalexin 250-500mg QHS. Obtain a urine C&S each trimester. If patient is admitted for pyelonephritis treatment, she may return to the midwifery service for her care upon hospital discharge.

Outpatient pyelonephritis treatment:

Candidates for outpatient therapy of pyelonephritis include patients who are less than 24 wks GA, relatively healthy, and adherent to therapy. These patients may be co-managed. Treatment generally involves Ceftriaxone 1gm IM, followed by a second dose 24 hrs later with repeat evaluation of status, and 14 days of Keflex 500 mg PO 4x daily.

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Vaginal Bleeding – First Trimester

A. Definition:

Any vaginal bleeding during pregnancy is not considered normal. However, it is quite common (occurring in 20-40% of all pregnancies). The differential diagnosis includes: ectopic pregnancy, implantation bleeding (usually appears 17 days post conception or about 4 1/2 wks after LMP), cervical lesion (cervicitis/erosion, polyps, cancer), abortion, hydatidiform mole, trauma, subchorionic hematoma and vanishing twin.

Ectopic pregnancy: extrauterine pregnancy, most often in the fallopian tubes.

Spontaneous Abortion: There are six categories:

1. Threatened – light to moderate bleeding occurs with or without uterine colic, without expulsion of products of conception and without dilation of cervix.
2. Inevitable – usually moderate to heavy bleeding with continuous and progressive dilation of cervix; usually accompanied by uterine colic; products of conception often at the os.
3. Incomplete – the expulsion of some, but not all, of the products of conception; cervical os remains open; moderate to heavy bleeding continues until abortion is complete; usually with uterine colic (SAB's <12 wks more often complete; SAB's >12 wks placental tissue is often retained)
4. Complete – expulsion of all gestational tissue.
5. Missed – the embryo or fetus dies in utero, but the products of conception are retained in utero.
6. Habitual – the occurrence of 3 or more consecutive SAB's.

Clinical Implications in Pregnancy: Depending on diagnosis may be benign and/or treatable (implantation bleed, cervicitis), portent of miscarriage (inevitable AB) or life threatening (ectopic pregnancy or hydatidiform mole)

B. Signs and Symptoms

1. Bleeding from vagina (variable in quantity and color).
2. May complain of vaginal discharge
3. Abdominal pain: pattern, severity, quality (differing quality e.g.: ectopic vs. SAB)
4. Possible leakage of fluid (if inevitable AB with ROM)
5. Passage of products of conception*.
6. Present, absent or increased pregnancy symptoms.
7. Lightheadedness

*Note: patients often mistake blood clots for products of conception, so it is somewhat unreliable.

C. Risk Factors

Ectopic

1. previous ectopic, hx tubal surgery, Hx PID, endometriosis, intrauterine conception, pregnancy after BTL, hx STIs, multiple partners, smoking, infertility, current IUD.

Spontaneous Abortion

1. Trauma, AMA, prev AB*, smoking, ETOH, Cocaine, methamphetamine, incr Gravidity, excessive caffeine intake, use of NSAIDs at time of conception, BMI <18.5 or >25, prolonged time to pregnancy, low folate level.

*Risk with previous AB:

- a. No previous SAB = 12.3%
- b. 1 previous SAB = 24%

- c. 2 previous SAB = 26%
- d. 3 previous SAB = 32%
- e. There is no firm data on risk of recurrence for SAB's.

D. Objective Findings

1. VS: If VS are not stable r/t significant blood loss consult and refer immediately.
2. Increased blood pressure (12-27% of pts with molar pregnancy have 1st trimester pre-eclampsia)
3. PE: Abdominal Exam: +/- FHT's, tenderness, rebound, guarding and uterine size
4. Pelvic Exam:
 - a. Speculum: Vagina: discharge, blood (color, quantity, from os?)
 - b. Cervix: friable, erythema, lesions, erosions, polyps, dilated or effaced, blood or POC's from os
 - c. Bimanual: Uterus: size consistent with dates, soft, tenderness,
 - d. Cervix: closed, uneffaced, normal consistency, CMT
 - e. Adnexa: Masses, tenderness
5. LAB:
 - a. Wet mount: prn if findings c/w cervicitis
 - b. Urine dip: if suspicious of molar pregnancy with pre-eclampsia (protein)
 - c. Urine pregnancy test: if suspect complete AB
 - d. Maternal Blood type and Rh
6. Ultrasound: if suspect ectopic pregnancy, molar pregnancy, SAB

E. Diagnostic Criteria

1. Ectopic Pregnancy
 - a. Bleeding in the first trimester is *always* an ectopic unless proven otherwise, (*e.g. by ultrasound IUP, Bhcg level >6,500ml/IU...*)
 - b. Ultrasound: IUP rules out ectopic (sometimes can see ectopic).
 - c. Lower than expected levels of hCG will dx an abnormal pregnancy or ectopic. HCG concentrations usually double every 1.4 to two days until six to seven weeks of gestation in viable intrauterine pregnancies (and in some ectopic gestations). If ectopic, hCG will be <6,500ml/IU
 - d. The classic presentation is pelvic pain at 9 wks
2. Implantation Bleeding: by timing and severity of bleed (usually occurs 17 days post conception and 4 1/2 weeks after LMP)
3. Cervical Lesion/Cervicitis: by exam and historical criteria. Pap important for diagnosis of CIN etc
4. Abortion: Diagnosis by ultrasound (evidence of viability), physical exam and symptoms (see Six categories of SAB)
5. Hydatidiform mole:
 - a. Significant increase in hCG
 - b. Ultrasound 98% effective in diagnosis
 - c. Prune colored bleeding
 - d. May see champagne grape like clusters from os.
6. Trauma: screening, history, signs of trauma
7. Subchorionic hematoma: seen on US

NOTE: Exact etiology of first trimester vaginal bleedings is often not discovered. The goal is to rule out serious pathology. (UpToDate, 2008)

F. Management/Treatment

Diagnostic

1. Speculum exam check for polyps and do CG, CT if you suspect cervicitis

2. FHR “90 to 96 percent of pregnancies with both fetal cardiac activity and vaginal bleeding at 7 to 11 weeks of gestation will result in an ongoing pregnancy, with the higher success rate occurring at the later gestational ages” (5)
3. Ultrasound: if you suspect: SAB, ectopic, molar pregnancy
4. Any tissue passed should be carefully examined and sent to pathology prn.
5. If data collection is suspicious or confirms: ectopic or molar pregnancy or incomplete, missed or inevitable AB must consult and refer for MD management.
6. Quantitative BhCG if suspicious of ectopic, molar pregnancy or SAB in consultation with MD;
 - a. BhCGs are followed to make sure they are rising appropriately. If levels are not rising appropriately, consult and refer for medical or surgical management.
 - b. The rate of fall of BhCG is slower with an ectopic pregnancy than with a complete abortion.
 - c. If a D&C is done the contents of the uterus are sent to pathology, which should confirm an IUP.

G. Specific Treatment/Management

1. Cervicitis
 - a. Treat offending organism (see appropriate protocol)
 - b. If no organism is identified may treat with Clindamycin 2% vaginal crème 1 appl PV Q HS x 7
2. Polyps: Usually avoid treatment until postpartum (if benign on pap). Polyps usually resolve with a vaginal birth. After delivery can refer for MD mgt, which is to use a hemostat and twist (CNM can do this), electrosurgical excision if large, send polyp to pathology. D&C if pedicle not visible.
3. Cancer: SIL or CIN are referred for colposcopy and/or directed biopsy. These procedures are safe during pregnancy. Conization increases risk for ROM, premature labor, and bleeding.
4. Hydatiform Mole:
 - a. Refer for treatment (immediate D&C and possible chemo- risk of choriocarcinoma with moles is about 1-2%)
 - b. Education: avoid pregnancy for one year
5. Ectopic Pregnancy: Refer for immediate MD treatment (surgery or methotrexate)
6. Abortion
 - a. Threatened AB: Pelvic rest until 12 wks and/or after bleeding stops.
 - i. (Williams – 48 hours after bleeding stops). Evidence does not support bed rest.
 - b. Inevitable AB: Consult (pt may await complete AB or choose D&C), Grieving
 - i. Education: danger signs, anticipatory guidance, possible D&C. If rh negative will need rhogam after expulsion.
 - c. Incomplete AB: Consult for D&C, Grieving. If rh negative will need rhogam after expulsion.
 - d. Complete AB: Grieving, Family Planning (if desires), reassurance. Rhogam if indicated.
 - e. Missed AB: Consult and Refer (many go on to have complete AB other need or want D&C) Family Planning, grieving reassurance. Rhogam if indicated.
 - f. Habitual AB: Refer for Karyotype (Genetic Counseling)

Diagnostic

1. Testing for AB etiology:
 - a. Maternal: chronic disease (thyroid, DM, autoimmune), endocrine defects, severe malnutrition, substance abuse, immunologic factors (antifetal antibodies), abnormalities of reproductive organs, physical and emotional trauma, Paternal Factors (chromosomal abnormality in sperm)
 - b. External Factors: radiation, chemicals, drugs, trauma

H. Education (General SAB):

1. Incidence – About 20% of all pregnant women who present for treatment of vaginal bleeding or staining, with or without cramping. Only half of these progress to SAB's. (Many losses are

preclinical...of all pregnancies 31% were lost, preclinical loss rate = 22%, clinically recognized loss rate = 12%)

2. Etiology: Abnormal Development of Zygote – 50-77% of early SAB's are associated with chromosomal anomaly of the conceptus
3. Future fertility: 60-80% likelihood of pregnancy without treatment for most except genetic problems and access of incompetent cervix
4. Family Planning:
 - a. Provide contraception as desired.
 - b. If pt is desirous of pregnancy ASAP best results are to have D&C (if clinically indicated) instead of expectant management. Evidence does not support the need to "wait a few cycles" for conception. If pt wants to wait there is no evidence that more than 1 cycle is needed.

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Vaginal Bleeding - Third Trimester
Placenta Previa
(See Low Lying Placenta Guideline prn)

A. Definition:

Implantation of the placenta in the lower uterine segment. In this abnormality, the placenta covers all or a portion of the internal os and precedes the fetus in vaginal delivery.

Variations are defined by the proximity of the placenta to the cervical os.

1. Partial – less than 30% coverage – represents 20-33% of the incidence – vaginal delivery is possible
2. Total – complete coverage of the internal os – represents 23-31% of the incidence – abdominal delivery is mandatory
3. Marginal/low lying – near to cervical os; no clear definition exists; vaginal delivery is usually possible

Before 24 weeks gestation, only a cautionary significance should be attributed to low lying placental implantation secondary to migration with development of the lower uterine segment. Definitive diagnosis of placenta previa is made at 30-32 weeks.

B. Clinical Implications in Pregnancy:

1. Overall, Placenta previa is associated with a very high risk of preterm delivery.
2. Antepartum bleeding or intrapartum bleeding occurs with dilation or vaginal exams or can occur spontaneously without warning. Vaginal bleeding usually occurs >30 weeks (1/3 at <30 weeks; 1/3 at 30-35 weeks; 1/3 at >36 weeks)
3. Placental location prevents engagement of the presenting part breech presentation or transverse lie is more common.
4. A first hemorrhage is rarely large, rarely associated with maternal death, and may stop spontaneously. Repeated bouts may occur and are frequently severe. The fetus frequently is born premature – management goals are to strive to control symptoms until fetal lung maturity can be achieved. The earlier the first bleed, the more likely intervention will be necessary prematurely.
5. Fetal hemorrhage may be severe if greater than 20% coverage; maternal hemorrhage may be severe if greater than 30%. The source of vaginal bleeding is presumed maternal. However, a fetal component could be significant if some disruption of the villi occurs. If a portion of the vaginal blood is fetal, the gestation would be at much higher risk for intrauterine morbidity/mortality. Placenta previa has an increased association with placenta accrete (attached to the myometrium), placenta increta (invades the myometrium), or placenta percreta (penetrates through the myometrium). Any patient with a complete previa will need a cesarean birth.

C. Differential Diagnosis:

Any bleeding during pregnancy (unless related to term labor) is not considered normal. Among the etiologies of third trimester bleeding are: cervicitis, cancer, polyp or trauma (see protocol for first trimester bleeding), bloody show related to preterm labor (see protocol for preterm labor), placenta previa and placental abruption (sudden onset of pain and dark venous blood- consult and refer immediately) . Included in the differential, although extremely rare are vasa previa and uterine rupture.

D. Incidence: 1:250 of all pregnancies (20% of these are complete)

1. Nulliparas – 1:1500; grandmultiparas – 1:20
2. Women with a h/o C/S have a risk of 1-4% of having a placenta previa in this pregnancy. Incidence of placenta accreta 3%, 11%, 40%, 61% and 67% with hx 1-5 C/S (Silver 2006)

E. Signs and Symptoms:

Primarily a Third Trimester phenomenon – usual a quiet and gradual onset of painless bright red vaginal bleeding, may wake up in a pool of blood, bleeding may be continuous or intermittent, pain can be present, but is associated with UC's, uterus soft and non-tender

F. Objective Findings

VS: Use to assess degree of hemorrhage (if bleeding):

1. Mild – no change in VS's without orthostatic changes, no peripheral evidence of circulatory depression, loss is <10% intravascular volume, normal FHT's
2. Moderate – postural changes in pulse (>10-20 beats/min) and diastolic blood pressure (>10mmHg) evidence of inadequate volume
 - a. Dyspnea, thirst, pallor, tachycardia, clammy skin, fetal distress
 - b. Usually not present mental status changes – apathy, agitation, loss of 10-25% of intravascular volume
3. Severe – shock, depressed or unrecordable BP fetal distress; loss of FHT's – 20-80% perinatal mortality, oliguria or anuria
 - a. Loss of 25% of intravascular blood volume

PE:

Abdomen: FHT's – usually present and wnl

- a. Uterine tone: soft, relaxed without tenderness
- b. Fetal malpresentation is a common finding

Pelvic: Assessment of degree of hemorrhage by checking pad and/or vulva: usually bright red blood;

- a. NO DIGITAL OR SPECULUM EXAMS WITH PREVIA
- b. LAB: Previous sonogram with evidence of previa
 - i. Maternal Blood type and Rh
 - ii. May do HCT to assess severity.

G. Diagnostic Criteria: Diagnosis by ultrasound

H. Management

With an ultrasound diagnosis at approx 28 weeks, marginal/ low lying or partial previa repeat the ultrasound in the third trimester to confirm diagnosis. Patient remains under midwifery care. See Low Lying Placenta Guideline.

With a second or third trimester diagnosis of complete previa: refer for MD management and delivery. They will schedule for a c/s at 36-37 weeks.

Marginal/low lying– vaginal delivery is usually possible. Midwifery management unless bleeding, then co-manage. If preterm bleed refer for MD management, may reassume management if pt term and no further bleeding. **See Low Lying Placenta Guideline.**

Partial Previa– vaginal delivery is sometimes possible. If continued partial previa in the late third trimester consult. May co-manage if no bleed. If h/o complete previa, but receded to partial previa, treat as complete previa and transfer to MD management.

With Bleeding: Midwifery management is diagnosis and referral. Consult, for immediate management on 6C, may return to CNM care as above (if anticipating NSVD at term)

I. Treatment: Pelvic rest, bed rest (if she has had bleed)

- J. Education: Danger signs, with bleeding to come to 6C immediately.
- K. Follow-Up: per routine if pt appropriate for CNM management.

Abruptio placentae

A. Definition

Abruptio placentae refers to premature separation of a normally implanted placenta after 20 weeks of gestation, but prior to delivery of the infant.

B. Risk Factors

1. Hypertension
2. Prior placental abruption
3. Trauma, smoking
4. Cocaine use
5. Uterine anomaly or fibroids
6. Multiparity
7. Advanced maternal age
8. Preterm premature rupture of the membranes
9. Bleeding diathesis
10. Multiple pregnancy
11. Polyhydramnios

C. Differential Diagnosis

Bloody show, previa, uterine rupture

D. Signs and Symptoms

1. Vaginal bleeding (80 percent)
2. Uterine contractions (35 percent)
3. Abdominal tenderness (70 percent) with or without nonreassuring fetal testing (50 percent)
4. Uterine tenderness suggests extravasation of blood into the myometrium (Couvelaire uterus).

E. Diagnostic Criteria

The amount of vaginal bleeding may not be a reliable indicator of the severity of the hemorrhage since bleeding may be concealed (retained in the uterine cavity). Ultrasound may show placental separation, but this is uncommon (only 2 percent of abruptions can be visualized on ultrasound); the major purpose of ultrasound examination is to exclude placenta previa.

F. Management

To L+D for monitoring and delivery

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Reviewed 6/2009

Varicella in Pregnancy

- A. Definition
 1. Varicella (chicken pox) is a highly contagious viral infection caused by a form of herpesvirus
 2. Varicella may remain dormant in the dorsal ganglia of the nerves and become reactivated years later as herpes zoster (shingles)
- B. Incidence
 1. Up to 95% of adults have a history of childhood varicella, which, with rare exceptions, confers lifetime immunity
 2. Of those adults who do not have a history of varicella, serological testing demonstrates immunity in 75-80%
 3. 99-100% of persons ages >15 years correctly identify as immune based on history
 4. Varicella infection in pregnancy occurs in about 1/2000 pregnancies
- C. Transmission
 1. By direct contact and respiratory (droplet) transmission of the virus
 2. 60-90% transmissibility to susceptible contacts
 3. Incubation period from exposure until first symptoms is 10-21 days
 4. Varicella is communicable beginning 2 days before lesions appear and ending when all lesions are crusted over, about 7-10 days later
 5. Herpes zoster is contagious to persons without varicella immunity
- D. Clinical illness
 1. Adult primary varicella infection can run a more virulent course and complications are more common than in children
 2. Fever, chills, myalgia and arthralgia, followed in a few days by the eruption of characteristic vesicles
 3. Vesicles are extremely pruritic, begin on the head and neck and spread to the trunk and extremities, break open, crust over
 4. Varicella pneumonia develops 1-6 days after the appearance of vesicles
 5. Symptoms of varicella pneumonia include a nonproductive cough with pleuritic chest pain, persistent fever, and dyspnea
 6. Herpes zoster infection presents as a painful eruption of cutaneous lesions along single or multiple dermatomes, usually lasting from 14-21 days
 7. Herpes zoster infection can have a neuralgia that lingers for up to a year
- E. Implications for Pregnancy
 1. 10-30 percent of pregnant women with varicella will develop varicella pneumonia, which has a 40% maternal mortality rate if not treated with acyclovir
 2. Congenital varicella syndrome is associated with cataracts, chorioretinitis, limb hypoplasia, hydronephrosis, microcephaly, mental retardation, dermatome lesions, and cutaneous scars. 25-40% of fetuses exposed to varicella in utero will be affected and demonstrate congenital varicella syndrome. The earlier in pregnancy the mother has varicella, the greater the risk of congenital varicella syndrome
 3. Infants exposed to varicella in utero have a higher risk for developing early onset herpes zoster
 4. Maternal varicella infection occurring from 6 days before to 2 days after birth can be passed to the newborn—there will not be sufficient time for the mother to develop immunity and pass it on to the fetus. Without passive immunity from the mother, the infant can become seriously ill
 5. Neonatal infection may include a disseminated rash, pneumonia, and encephalitis
 6. About 5% of infants with neonatal varicella infection will die
 7. Herpes zoster is rare in pregnancy and has no known adverse effect on mother or fetus
- F. Lab Tests
 1. All pregnant women will be asked about their history of varicella infection or varicella vaccination in the past
 2. For those women who have not had varicella, have not been vaccinated, or have no idea whether or not they had varicella or were vaccinated, send varicella IGG

3. Varicella IGG tests are run daily M-F, with results available in the afternoon
4. Women with a positive antibody test do not need further follow-up, and they and their fetus are not at risk from exposure to varicella during pregnancy or in the early neonatal period
5. Varicella IGM is used to evaluate whether a patient is developing a primary varicella infection
- G. Varicella zoster immune globulin (VZIG)
 1. Must be given within 96 hours of exposure to varicella
 2. Will usually ameliorate the course of maternal disease
 3. Does not appear to have an effect on fetal infection
 4. Not indicated for herpes zoster
 5. Dose is 125 units per 10 kg body weight, up to 625 mg IM
 6. Cost is \$400-\$500
 7. Can be obtained from the pharmacy
 8. Vaccination for varicella should be deferred for at least 5 months following administration of VZIG
- H. Varicella vaccine (Varivax)
 1. The varicella vaccine is a live attenuated vaccine, and is contraindicated in pregnancy
 2. Vaccination should be deferred for at least 5 months following blood or plasma transfusions, or administration of any immune globulin including VZIG
 3. Pregnancy should be avoided for 3 months following vaccination
 4. If a woman is vaccinated and then finds that she is pregnant, she may be advised that the risk to the fetus is theoretical, as no known anomalies or cases of CVS have been documented after vaccination
 5. Cases of vaccination during pregnancy should be reported to the Varicella Vaccination in Pregnancy Registry at (800) 986-8999
 6. Vaccination is safe for use in breastfeeding mothers
 7. Give Varivax 0.5 cc subcutaneous at discharge from hospital. Second dose 0.5 cc subcutaneous in 4-8 weeks
- I. Management of patients with negative varicella antibodies
 1. Teaching re:
 - a. Signs and symptoms of varicella infection and fetal, maternal risks
 - b. Importance of avoiding persons with varicella or direct contact with herpes zoster lesions
 - c. Call immediately if exposed to varicella—stress the importance of timely notification of provider so patient can receive VZIG
 - d. If develops symptoms of varicella, call clinic, but do not come in as she may expose others
 - e. Importance of postpartum vaccination—breastfeeding is not a contraindication
 2. If exposed to varicella, give VZIG within 96 hours and consult
 3. Vaccinate postpartum
- J. Management of patients with suspected varicella infection and negative or unknown antibody status
 1. Isolate patient from other pregnant women
 2. If unknown antibody status, draw varicella IGG. If unknown or negative Varicella antibody status, also draw varicella IGM (write in on lab slip)
 3. Consider VZIG (only if within 96 hours of exposure)-depending on when patient was exposed and how soon IGG results will be back (run daily M-F)
 4. Carefully assess for pneumonia-low threshold for ordering CXR
 5. Patients with respiratory compromise or severe symptoms should be hospitalized for respiratory support and IV Acyclovir
 6. Consider Acyclovir 800 mg 5x/day po for lesser symptoms
 7. Consult
- K. If documented varicella infection
 1. Consider Prenatal Diagnosis consult if first or second trimester
 2. Level II ultrasound
 3. If the patient is near term with varicella, consult for a management plan for labor and birth

4. Notify pediatricians if patient is admitted in labor
 5. Consult
- L. For more information, see following table

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Revised 5/2006, 8/2009

Table 10.9
**Guidelines for Preventive Measures After Exposure to Chickenpox
in Nursery/Maternity Service**

<u>Type of Exposure/Disease</u>	<u>Chickenpox lesions</u> <u>present</u>		<u>Disposition</u>
	<u>Mother</u>	<u>Neonate</u>	
A. Siblings at home have active chickenpox when neonate & mother ready for discharge	No	No	1. Mother: if hx of chickenpox, may return home. If no hx she should be tested for VZV antibody.^a If test positive, may go home; if test negative VZIG^b is given and she is discharged home. 2. Neonate: may be sent home with mother if mother has hx of varicella or is VZV antibody-positive. If mother susceptible, give VZIG to infant and send home or place in protective isolation.
B. Mother with no history of chickenpox; exposed during period 6–20 days antepartum ^d	No	No	1. Exposed mother and infant: send home at earliest date unless siblings at home have communicable chickenpox.^c If so, may give VZIG and discharge home as above. 2. Other mothers and infants: no special management indicated. 3. Hospital personnel: no precautions indicated if there is hx of previous chickenpox/zoster. In absence of hx, immediate serologic testing is indicated to determine immune status.^a Nonimmune personnel should be excluded from pt. contact until 21 days after an exposure. 4. If mother develops varicella 1–2 days postpartum, infant should be given VZIG.
C. Onset of maternal chickenpox ante or postpartum ^d	Yes	No	1. Infected mother: isolate until no longer clinically infectious. If seriously ill, treat with acyclovir (see text). 2. Infected mother's infant: give VZIG^b to neonates born to mothers with onset of chickenpox < 5 days before delivery and isolate separately from mother. Send home with mother if no lesions develop by the time mother is noninfectious. 3. Other mothers and infants: send home at earliest date. VZIG may be given to exposed neonates. 4. Hospital personnel: same as B-3.
D. Onset of maternal chickenpox antepartum ^c			1. Mother: isolation unnecessary. 2. Infant: isolate from other infants but not from mother. 3. Other mothers and infants: same as C-3 (if exposed). 4. Hospital personnel: same as B-3 (if exposed).
E. Congenital chickenpox	No	Yes	1. Infected infant and its mother: same as D-1 and 2. 2. Other mothers and infants: same as C-3. 3. Hospital personnel: same as B-3.

^a Send serum to virus diagnostic laboratory for determination of antibodies to VZV by a sensitive technique such as FAMA, LA, or ELISA. Personnel may continue to work for 8 days after exposure pending serologic results because they are not potentially infectious during this period. Antibodies to VZV >1:4 probably are indicative of immunity.

^b VZIG is available through the American Red Cross. The dose for a newborn is 1.25 mL (1 vial). The dose for a pregnant woman is conventionally 6.25 mL (5 vials).

^c Considered noninfectious when no new vesicles have appeared for 72 hours and all lesions have crusted.

^d If exposure occurred < 6 days antepartum, mother would not be potentially infectious until at least 72 hours postpartum.

Source: From "Chickenpox, measles and mumps," by A. A. Gershon. In J.S. Remington & J.O. Klein (Eds.), *Infectious diseases of the fetus and newborn infant* (4th ed., p. 590). Copyright 1995 by W.B. Saunders. Adapted with permission.

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WBC Elevation

A. Definition

1. Pregnancy is associated with leukocytosis, primarily related to increased circulation of neutrophils
2. The neutrophil count begins to increase in the second month of pregnancy and plateaus in the second or third trimester, at which time the total white blood cell counts ranges from 9000 to 15,000 cells/microL
3. Data from two series reported mean white blood cell counts in laboring patients of 10,000 to 16,000 cells/microL, with an upper level as high as 29,000 cells/microL; the mean count increased linearly with the duration of elapsed labor
4. The white blood cell count falls to the normal nonpregnant range by the sixth day postpartum

B. Pregnancy Implications

Infection

Leukemia (zebra)

1. A normal or elevated WBC occurs in 90% cases of ANL/acute lymphocytic leukemia
2. One fourth of people with ANL have WBC counts of 50,000, while one third of people with ANLL/acute nonlymphocytic leukemia are leukopenic

C. Signs and Symptoms

1. None
2. Fever
3. Hx of rupture of membranes
4. Hx of feeling ill

Possible associated signs and symptoms:

- a. Anemia
- b. Thrombocytopenia
- c. Granulocytopenia
- d. Fatigue
- e. Gastritis
- f. Tonsillitis
- g. Nosebleeds
- h. Gumbleeds
- i. Whole body itch

D. Diagnostic Criteria

Symptoms with unexplained leukocytosis would require a bone marrow biopsy for definitive diagnosis

E. Plan

Diagnostic

1. For WBC $\geq$ 15,000, recheck CBC with diff and peripheral smear in 2-4 weeks
2. Evaluate for presence of illness at the time of initial CBC.
3. Consider cholestasis workup if whole body itch is among the symptomatology

Follow up

4. If WBC stays elevated, consult with MD
5. Patient may need Hematology consult—this can be coordinated via HROB clinic visit

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State of California—Health and Human Services Agency
California Department of Public Health



KAREN L. SMITH, MD, MPH

Director and State Public Health Officer

Date: January 10, 2018

To: California Health Care Providers

From: California Department of Public Health

EDMUND G. BROWN JR.

Governor

Updated Guidance for Health Care Providers: Assessment and Testing for Zika Virus Infection in Pregnant Women and their Newborns

I. Background: The impact of Zika virus infection in pregnancy remains a great concern. Pregnant women should have access to Zika virus testing, including testing of asymptomatic pregnant women when appropriate. Nearly half of all California Zika cases to date have reported travel to Mexico and many others have reported travel to other Central and South American countries. In 2017, Mexico has reported declining numbers of cases and the incidence of new Zika infections in California has substantially declined. These factors together lead to a lower pre-test probability of infection when considering testing pregnant women and their newborns. As of November 24, 2017, 162 pregnant women with travel-associated Zika infection have been reported in California since 2015. Of these, 136 women have had completed pregnancies and 9 infants have been born with microcephaly and other Zika-associated anomalies. More than half of the infants born in California with Zika-associated birth defects were born to Zika-exposed mothers who were asymptomatic for Zika infection.

Based on the changing epidemiology of Zika virus infections in California since 2015, together with input from specialty organizations, CDPH is updating recommendations for the assessment and testing of pregnant women and their newborns for Zika virus infection.

These updates align CDPH recommendations with current CDC interim guidance^{a,b}. See the [CDPH Zika webpage](#) for [tools](#) and resources to implement this guidance in California.

Zika virus testing by detection of viral RNA (nucleic acid testing, NAT) or serology (IgM antibody testing) is available in commercial clinical laboratories throughout California and, as is typical of screening for other infectious

diseases, can be directed to traditional commercial laboratory resources. Please submit your specimens to commercial laboratories for processing using your regular clinical testing protocol. Local public health laboratories and CDPH conduct confirmatory Zika virus testing as necessary to accurately diagnose and monitor the incidence of Zika virus disease in California.

For questions regarding the application of this updated interim CDPH Zika Guidance in your area, please contact [your local health department](#). CDPH is available to your local health department for consultation as needed.

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II. Zika Virus Testing for Pregnant Patients: CDPH, CDC, ACOG and the Society for Maternal Fetal Medicine recommend that all pregnant women should be evaluated for possible Zika virus exposure during each prenatal care visit. This evaluation should include an assessment¹ of signs and symptoms of Zika virus disease, a travel history to an area with risk of Zika virus transmission², and a woman's sexual partner's potential exposure.

- A. **Symptomatic Pregnant Women** with possible Zika virus exposure² and symptoms (acute onset of fever, rash, arthralgia, or conjunctivitis) of Zika virus disease should be tested for Zika virus as soon as possible:
 - i. Concurrent Zika virus NAT in serum and urine and IgM antibody testing if 12 weeks or less since symptom onset. If non-negative IgM and Zika virus NAT negative, confirm with plaque reduction neutralization test (PRNT).
- B. **Asymptomatic Pregnant Women** with ongoing³ possible Zika virus exposure² and without prior evidence of laboratory-confirmed Zika virus infection should be offered:
 - i. NAT testing on serum and urine three times during pregnancy starting with the initiation of prenatal care and coinciding with non-consecutive prenatal visits. Testing each trimester may be considered.
 - ii. IgM antibody testing may be considered after pre-test counseling and individualized risk assessment for those with an appropriate exposure history (e.g., exposure limited to current pregnancy), but is not routinely recommended. Prolonged IgM persistence may make it challenging to determine whether the infection occurred during the current pregnancy or prior to the current pregnancy. If done, IgM testing may be performed concurrently with NAT testing.
- C. **Asymptomatic Pregnant Women** with recent but without ongoing exposure are not routinely tested **but instead should be assessed carefully** for factors that increase the likelihood of Zika infection. A patient's risk tolerance and decision-making regarding the pregnancy may be sufficient justification to test for Zika virus infection.
 - i. Risk factors that may prompt testing include:
 - a) Locally-transmitted Zika infections reported in the region of travel at the time of the possible exposure
 - b) Sexual partner with travel to a Zika-risk area and unprotected (e.g., without use of male or female condom or dental dam) sexual exposure
 - c) Longer duration of travel (e.g., over four weeks) or multiple sexual exposures
 - d) Engagement in higher risk activities (e.g., outdoor recreation as opposed to indoor activities) while in an area with risk of Zika transmission
 - e) Known mosquito bites in an area with risk of Zika transmission
 - f) Lack of use of protective clothing and insect repellent on a regular basis in an area with risk of Zika transmission
 - g) Compromised integrity of housing in an area with risk of Zika transmission (e.g., lack of window screens or air conditioning)
 - h) Other household members diagnosed with Zika virus infection
 - i) High risk patient occupation, e.g., potential laboratory or needle stick exposure
 - j) Patient is recipient of recent transfusions or transplants, especially in an area with risk of Zika transmission and there is not reliable testing of blood supply for Zika virus

¹ *Screening Pregnant Women for Zika Testing*, https://www.cdc.gov/zika/pdfs/ZikaPreg_ScreeningTool.pdf

² For symptomatic pregnant women/persons, refer to the *CDC Areas with Risk of Zika* (<https://wwwnc.cdc.gov/travel/page/zika-information>).

For asymptomatic pregnant women, use the *WHO Zika Virus Classification Table* (<http://www.who.int/emergencies/zika-virus/classification-tables/en/>) WHO risk classification "Category 1" and "Category 2" countries to help limit the risk of false positive test results. The only documented transmission of Zika virus in the U.S. has been in Texas and Florida, but active transmission is **not ongoing at this time**.

³ "Ongoing risk of Zika virus exposure" is defined as follows: Currently living in or frequently (daily or weekly) traveling to an area with Zika virus transmission or having ongoing unprotected exposure to a potentially infected sexual partner.

- ii. When indicated, testing high risk asymptomatic pregnant patients without ongoing exposure should include:
 - a) Concurrent Zika virus NAT and IgM antibody testing if 12 weeks or less since exposure. If non-negative IgM and Zika NAT negative, confirm with PRNT. Prolonged IgM persistence may make it challenging to determine whether the infection occurred during the current pregnancy or prior to the current pregnancy.
- D. Pregnant women **who have recent possible Zika virus exposure and who have a fetus with prenatal ultrasound findings consistent with congenital Zika virus syndrome should receive Zika virus testing to assist in establishing the etiology of the birth defects. Testing should include both NAT and IgM tests.**
 - i. If amniocentesis is being performed as part of clinical care, NAT testing of amniocentesis specimens should also be performed.
- E. **Pathology testing of placental tissues for Zika virus infection may be considered to aid in maternal diagnosis for women with an exposure history/epidemiologic link to an area with risk of Zika infection, as appropriate.**
 - i. Placental Zika virus testing may be considered on a case-by-case basis in consultation with public health and is prioritized for: 1) symptomatic mothers with probable (unspecified flavivirus) Zika virus infection; and 2) mothers with an infant or fetus with possible Zika virus-associated birth defects but no definitive diagnosis of Zika virus infection during pregnancy.

III. Zika Virus Testing for Pregnant Women at Antenatal and Delivery Hospitalizations

- A. Pregnant women with an exposure history who meet the criteria in II. above and have not yet been tested since last exposure should be evaluated for testing for Zika virus as described.

IV. Zika Virus Testing for Newborn Infants

- A. **Laboratory testing for congenital Zika virus infection is recommended for the following infants:**
 - i. Infants born to mothers with laboratory evidence of possible Zika virus infection during pregnancy.
 - ii. Infants with clinical findings suggestive of congenital Zika syndrome and possible maternal Zika virus exposure during pregnancy, regardless of maternal testing results.
- B. **Newborn specimen collection should occur ideally within the first two days of life.**
 - i. Zika virus NAT testing should be performed on both infant serum and urine and Zika virus IgM antibody testing should concurrently be performed on infant serum. If non-negative IgM and negative Zika virus NAT, confirm with PRNT.
 - ii. Note: Birth hospitals may consider collecting infant specimens for concurrent Zika virus testing if maternal testing is being done.
If CSF is collected for other purposes, NAT and IgM antibody testing should be performed on CSF.
 - iii. For infants with clinical findings consistent with congenital Zika syndrome, testing CSF for Zika virus NAT and IgM antibodies should be considered, especially if serum and urine testing are negative and another etiology has not been identified.

^a Adebajo T, Godfred-Cato S, Viens L, et al. Update: Interim Guidance for the Diagnosis, Evaluation, and Management of Infants with Possible Congenital Zika Virus Infection — United States, October 2017. *MMWR Morb Mortal Wkly Rep* 2017;66:1089–1099. DOI: <http://dx.doi.org/10.15585/mmwr.mm6641a1>

^b Oduyebo T, Polen KD, Walke HT, et al. Update: Interim Guidance for Health Care Providers Caring for Pregnant Women with Possible Zika Virus Exposure—United States (including U.S. territories), July 2017. *MMWR Morb Mortal Wkly Rep* 2017;66:781–93 DOI: <http://dx.doi.org/10.15585/mmwr.mm6629e1>

SFDPH UPDATE: Assessment and Testing for Zika Virus Infection in Pregnant Women and their Newborns¹

As of January 10, 2018, Zika virus testing (PCR and IgM) is available in commercial clinical laboratories throughout California, and providers should direct their testing requests to these laboratories. The CDPH Viral and Rickettsial Laboratory (VRDL) conducts confirmatory Zika Virus testing following preliminary positive Zika IgM results; commercial laboratories will forward specimens to CDPH VRDL for such testing.

ALL pregnant women should be evaluated for possible Zika virus exposure during each prenatal care visit. The evaluation should include an assessment of:

1. Signs and symptoms of Zika virus disease;
2. Travel history to an area with risk of Zika virus transmission; and
3. A woman's sexual partner's potential exposure.

Below is a summary of the current Zika testing guidance for pregnant women and their newborns:

Pregnancy Status	Clinical Status	Zika Exposure History	Testing Recommendations
Pregnant	Symptomatic ²	Recent or ongoing ^{3, 4}	Concurrent Zika PCR (serum and urine) and Zika IgM if ≤ 12 weeks since symptom onset.
Pregnant	Asymptomatic	Ongoing ³	Zika PCR 3 times during pregnancy; testing each trimester may be considered, AND Zika IgM may be considered for those with exposure history limited to current pregnancy. If IgM is to be done, may be performed concurrently with PCR testing.

¹ California Department of Public Health, Updated Guidance for Healthcare Providers: Assessment and Testing for Zika Virus Infection in Pregnant Women and their Newborns, January 10, 2018

<https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/UpdatedZikaGuidanceforHCPsCaringforPregnantWomen.pdf>.

² Symptoms of Zika virus disease include acute onset of fever, maculopapular rash, arthralgia, and/or conjunctivitis. .

³ Ongoing risk of Zika exposure includes: Currently living in or frequently traveling to an area with Zika virus transmission, or having unprotected exposure to a potentially infected sexual partner.

⁴ For symptomatic women, refer to CDC Areas with Risk of Zika, <https://wwwnc.cdc.gov/travel/page/zika-information>.

⁵ For asymptomatic women, refer to the WHO Zika Virus Classification Table, <http://apps.who.int/iris/bitstream/10665/259690/1/zika-classification-12Dec17-eng.pdf?ua=1>, Category 1 and 2 countries.

Pregnancy Status	Clinical Status	Zika Exposure History	Testing Recommendations
Pregnant	Asymptomatic	Recent, but not ongoing.	Testing not routinely recommended; shared decision-making to assess Zika risk and indications for testing ⁶ . If testing is done, send concurrent Zika PCR and IgM ≤ 12 weeks from exposure.
Pregnant	Fetal ultrasound finding consistent with congenital Zika virus syndrome	Recent	Zika PCR and IgM (maternal specimens) concurrently as soon as the abnormal ultrasound is detected ⁷ .
At Delivery	Maternal history of Zika symptoms, unspecified flavivirus IgM positive during pregnancy (probable Zika infection)	Recent or ongoing possible maternal exposure	Placental PCR and IgM testing may be considered.
At Delivery	Mother asymptomatic, Zika testing not performed during pregnancy, fetus or infant with possible Zika virus-associated abnormalities	Recent or ongoing possible maternal exposure	Placental PCR and IgM testing may be considered.
Newborn	Mother with laboratory evidence of Zika virus infection during pregnancy	Possible maternal exposure history during pregnancy	Infant PCR (serum and urine) and IgM ⁸ .
Newborn	Findings suggestive of congenital Zika syndrome	Possible maternal exposure history during pregnancy	Infant PCR and IgM

⁶ See CDPH document Updated Guidance for Healthcare Providers: Assessment and Testing for Zika Virus Infection in Pregnant Women and their Newborns (Jan 10, 2018) <https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/UpdatedZikaGuidanceforHCPsCaringforPregnantWomen.pdf>, section C, i, a-j, for risk factors that may prompt testing in asymptomatic pregnant women with recent, but not ongoing exposure.

⁷ If amniocentesis is being performed as part of clinical care, PCR testing of amniotic fluid should also be performed. Refer to CDPH Zika Laboratory Testing Guidance for specimen collection and handling information https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/ZikaLaboratoryTestingGuidance_VRDL.pdf.

⁸ Newborn specimen collection should ideally occur within the first two days of life. Providers could consider collecting infant specimens if maternal testing is being done or maternal results are pending.

Appendix A: Offsite Clinics

Mission Area Health Associates

MAHA/Mission Area Health Associates is the primary organization that oversees Mission Neighborhood Health Center and Excelsior Group for Women and Children.

Mission Neighborhood Health Center

240 Shotwell Street
San Francisco, CA 94110
(415) 552-3870 Ext. 251

MNHC Organization:

CNM Coordinator: Ana Delgado
Medical Directors: Ricardo Alvarez, MD
Executive Director: Brenda Storey; Patty Caplan, COO
RN: Jessica McFadden

OB Clinic Days

- Monday 1-5 p.m. (2 CNMs)
- Tuesday 8:30 a.m.-12:00 p.m. OB intake with RN per CPSP Guidelines
- Thursday 9 a.m. – 12 p.m. and 1 p.m.-5 p.m. (3 CNMs)
- Centering Pregnancy Sessions: Thursday PM and Friday AM & PM

MNHC provides complete low risk prenatal services for women on a sliding fee basis. CNMs from San Francisco General Nurse-Midwifery Service are the primary care providers. Obstetrical consultation is available with attending physicians and/or chief residents. Client are delivered by CNMs at San Francisco General Hospital Upon discharge clients and their infants are referred back to MNHC. Those clients who develop complications that require obstetric care are transferred to the MD caseload.

Excelsior Group for Women and Children

4434 Mission St.
San Francisco, CA 94112
(415) 406-1353, fax: (415) 452-9307

Excelsior provides complete low risk obstetrical and gynecological services. The Excelsior is managed by nurse-midwives. Obstetrical consultation is with attending physicians and/or chief residents from the University of California Department of Ob/Gyn and RS. CNMs attend these clients' deliveries at San Francisco General Hospital. Upon discharge from SFGH, clients and their infants are referred back to the Excelsior for postpartum/gyn care and MNHC for baby care. CNMs practicing at the Excelsior site follow the AP Clinical Guidelines of the Nurse Midwifery Service.

Excelsior Organization:

CNM Coordinator: Judith Benkert pager# 605-2761
Clinic Chief: Elizabeth Perry, MD
Associate Administrator: Sylvia Moreno, LCSW 406-1353

OB Clinic Days

Clinic for Prenatal Care and Postpartum: Wednesday 10:00 am – 5:00 pm

Obstetrical referral process

1. Phone back up
CNMs may consult with the attending physician or chief resident should questions regarding management arise during clinic hours.

2. Labor and delivery drop-in
Clients from MNHC or Excelsior that require immediate investigation for deviations from normal, i.e., NST, deck sono or physical examination by a CNM or an MD may be referred to 6C with a consult referral sheet. The CNM on call will be notified of the referral by the CNM at MNHC/Excelsior to perform or facilitate the evaluation and follow-up.
3. Collaborative Management (see description CNM Prenatal Protocol: Part A Introduction)
Those MNHC/Excelsior clients requiring more intensive care, including ancillary services not available or appropriate for MNHC, but still within the scope of Nurse-Midwifery management, may be referred to the CNM service at SFGH for the duration of their pregnancy or of their particular problem (i.e. GDM, chronic hypertension). This decision may be arrived at through phone consult, Labor and Delivery drop-in, or high risk conference processes. Guidelines for collaborative management remains as above. Clients may be returned to MNHC as appropriate (i.e.: off tocolysis)
4. Medical Transfer
As per CNM protocol, all clients requiring medical treatment beyond the scope of nurse-midwifery are transferred to the physician caseload.

Prescription Process:

Prescriptions are filled at MNHC or Walgreen's and are paid for by the clients or by their insurance. The prescription must be stamped with Medical Director's, Name and Number. Arrangements have been made with pharmacists to accept prescriptions signed by CNMs with furnishing numbers.

Social Services

Social services are available to clients at each clinic. All clients receive from her a psychosocial evaluation with follow-up as needed according to CPSP guidelines.

Nutritional Counseling

An RD counsels all women seen in the clinic and provides WIC and community resources.

Health Education

A health educator conducts a series of prenatal and parenting classes during clinic hours. There is an incentive program in place to encourage attendance of health education classes. Clients who attend classes receive "points" that they can use to purchase new baby clothes from the clinic. The health educator and Clinica Esperanza provide HIV counseling and testing.

Family Planning

A Family planning counselor is on staff to assist clients in their choice of family planning method used after birth. She provides information, counsels, and obtains consent.

Communication with Birthing Center

A staff person from MAHA goes to the Birthing Center at SFGH on Friday.

1. Visits with postpartum clients and makes follow - up appointments for women and their babies, and
2. Brings copies of MNHC/Excelsior prenatal charts for the records at the Birthing Center. Each client carries a green passport(mini-record) in the event that she will arrive to the birth center without full current prenatal record on hand.

Postpartum

Postpartum discharge dictations are downloaded from LCR (Invision) week visit with the primary CNM.
MNHC: Fax (415) 552-0317, Excelsior Fax (415) 452-9307

Postpartum patients are seen at Excelsior and MNHC for a 2-week appointment. The respective clinics will download the discharge summary for this visit.

Additional Services

Genetic counseling services are available at SFGH's Women's Clinic through the referral process. (See Genetic referral guideline) The services of a Public Health nurse can also be accessed through the clinics by a referral process.

Appendix B: Women's Health Center

5M Women's Health Center
1001 Potrero 5M
San Francisco, CA 94112
206-7303

CNM and Perinatal Services Director:	Margy Hutchison
Medical Director	Misa Perron-Burdick
Nurse Manager	Marisella Carranza
Centering Coordinator	Karla Ayala

Social Services

Social Services are available to clients at each clinic.

The current social workers are:

- Amy Kwan
- Tahnee Gantt
- Victoria Sanabria

Nutrition Counseling

Nutritional services are offered to all clients. They also receive WIC and community resources. Currently, we have the following counselors:

Diabetes Care

The clinic has RNs trained to manage gestational diabetes. They are responsible for nutritional counseling, education re: home blood glucose monitoring, follow up on diet, review of blood sugar record and adjustments to insulin requirements under consultation with MD or Mary Mays CNM.

Antenatal Testing Center

Ext 8705

The antenatal testing center is located on the 6th floor across from the Women's Options Center. It is open M-F during clinic hours and sees clients by appointment and referral from providers. Antenatal testing is done using the hospital-wide standardized procedure. See Antenatal testing guidelines for appropriate referral.

Additional Services

Genetic counseling services are available at SFGH's Women's Clinic through the referral process. (See Genetic Referral Guideline) The services of a Public Health nurse can also be accessed through the clinics by a referral process.

Referral resources

High risk OB

An OB consult can be done in several ways: by phone, in person or through the referral process (eReferral for outlying clinics or the regular out patient referral form). If you wish to have a client seen in the high risk OB clinic, fill out an outpatient consult sheet, include a brief history and the reason for the consult and put it in the front of the antenatal chart. Either the RN caseworker or you can make an appointment. Refer to High risk OB guidelines for clarification on the appropriateness collaborative management vs transfer of care.

Nurse practitioners

Postpartum clients who need follow up family planning or gynecologic services can be referred to the nurse practitioner group. No outpatient consult is necessary unless there is a specific issue you want to be addressed.

Psychiatry

Psychiatry clinic is on Thursday am. They rarely have Spanish speaking providers, so they rely on interpreters. The clinic is quite busy, so they request to not see clients for psychotherapy. If a client has depression requiring medication, a referral to psychiatry is appropriate. Social work is a good resource for discerning the appropriateness of a psychiatry referral.

National Breast and Cervical Cancer Early Detection Program

This program is through the CDC and provides low-income, uninsured and underserved women access to timely breast and cervical cancer diagnostic services. Eligibility can sign women up for this program. It pays for clinical breast exams, mammograms, pap tests, pelvic exams, and diagnostic testing if results are abnormal.

Family Pact

This program provides no-cost family planning services to low-income men and women, including teens. Patients should be referred to eligibility to sign up.

Appendix C: Getting your Patient Connected to Primary Health Care in the SFHN

For up-to-date information on the primary care clinics in the San Francisco Health Network (SFHN) go to the SFHN website. Patients who see us during pregnancy are members of the SFHN and cannot go outside this system for care without contacting their insurance.

Women who do not have established primary care can be referred to the SFHN primary care system via e-referral. All clinics are family practice, so women should be told that they can also choose to have their baby/kids seen there with the same provider.

E-referrals can be sent during pregnancy, while inpatient, or at the postpartum visit. The e-referral face page gives you clear information on what needs to be included in the referral, but be sure you have information like: working phone number, preferred clinic (if she has one), preferred provider characteristics (gender? certain ethnicity/race? language?), and reasons for referral (eg. LTB, mental health issues, just needs primary care). If a 5M patient wants a LARC this can either be placed in 5M prior to establishing care at the primary care clinic, or you can ask that she be placed with a provider who has LARC skills – just a small risk with this that the referral won't be filled in a timely manner and that there will be a delay in the LARC placement.

Appendix D: Legal Resources for Immigrants

1. OJO A LA MIGRA LA RAZA CENTRO LEGAL
474Cale Valencia, Oficina 295, San Francisco, CA 94103
(415) 553-3418
Llámenos si usted es víctima de abuso policiaco o de la Migra
2. DERECHOS DE EMPLEO DE LOS IMMIGRANTES BAJO LAS LEYES FEDERALES CONTRA LA DISCRIMINACIÓN
US Equal Employment Opportunity Comisión, San Francisco District Office
901 Market Street, Suite 500, San Francisco, CA 94103
(415) 356-5126
3. LA CLÍNICA PARA LOS DERECHOS DEL TRABAJADOR
(415) 864-8208
Llame si cree que sus derechos han sido violados o si tiene cualquier pregunta acerca del trabajo
4. NATIONAL LAWYERS GUILD National Office
NLG Oficina Nacional
(212) 627-2656
www.nlg.org
5. NLG IMMIGRATION PROJECT C-SF / NLG PROYECTO NACIONAL DE INMIGRACIÓN C-SF
(617) 227-9727
Línea de ayuda para abogados y línea de ayuda para conseguir los servicios de un abogado
6. CENTRO NACIONAL DE LEYES DE INMIGRACIÓN
Línea de información de Inmigración
(415) 285-1055
www.nilc.org
7. MUA - MUJERES UNIDAS Y ACTIVAS
Oficina de Mujeres Unidas y Activas
Edificio de Mujeres
3543 Calle 18, (entre Valencia y Guerrero), San Francisco, CA 94110
(415) 621-8140
Es un grupo de mujeres inmigrantes latinas que promueve un espíritu de lucha por la justicia social, nuestros derechos, y una comunidad sin violencia. Las reuniones son los miércoles de 10:30 am a 12:30 am y jueves de 5:00 pm a 7:00 pm

Appendix E: SFGH eReferral News for Current eReferral Users

eReferral Changes and Updates

- ***NEW*** eReferral is no longer accessible through the CHN intranet. This decision was made to ensure that patient information is correctly linked to the consultative request. Our apologies for any inconvenience this causes.
- ***NEW*** If after receiving the reviewer's response you have concerns about your patient not being scheduled for an appointment or the timeliness of the appointment, please do not hesitate to contact the reviewer. You can now do this directly through the patient's original eReferral rather than emailing the reviewer. Please use this if you have additional information to provide, or if you feel that the appointment date needs to be expedited or changed.
- Please note that any communication by way of eReferral will become part of the patient's permanent medical record; therefore please be judicious in what you write about the patient.
- Some of the clinics now have wait times of less than 2 weeks for a new patient appointment. Please take a moment to ensure that your patient's telephone number is correct; otherwise the clinic will not be able to contact your patient regarding his/her appointment. (The policy is that the specialty clinic is responsible for patient notification of appointments only if the appointment is scheduled within two weeks.)

Appendix F Herbal References for Cholestasis

Oral guar gum, a gel-forming dietary fiber relieves pruritus in intrahepatic cholestasis of pregnancy.

Acta Obstet Gynecol Scand. 2000 Apr; 79(4):260-4.

Riikonen S, Savonius H, Gylling H, Nikkila K, Tuomi AM, Miettinen TA.

Helsinki City Maternity Hospital, Finland.

BACKGROUND: Guar gum is a gel-forming fiber, which increases fecal elimination of bile acids. It may therefore be beneficial in the treatment of intrahepatic cholestasis of pregnancy. **METHODS:** Forty-eight patients with intrahepatic cholestasis of pregnancy were randomized double-blind to receive either guar gum or placebo until delivery. Serum bile acid concentration was measured. Pruritus was assessed by both the investigator and the patient. **RESULTS:** At baseline, the intensity of pruritus and the serum bile acid concentration were significantly related. Guar gum diminished or prevented worsening of pruritus, while in the placebo group pruritus was enhanced ($p < 0.05$). In the placebo group serum bile acid concentration increased significantly, whereas in the guar gum group it remained unchanged ($p < 0.05$ between the groups). Guar gum treatment-induced changes of the pruritus score and serum bile acid concentrations were significantly related ($p < 0.01$). **CONCLUSIONS:** Guar gum relieved the intensity of pruritus without any side effects and prevented the rise in serum bile acid concentration in this placebo-controlled and double-blind study of patients with intrahepatic cholestasis of pregnancy.

Herbal Reference

Appendix: reference on milk thistle and guar gum

The following is from the encyclopedia at iherb.com

Based on the extensive folk use of milk thistle in cases of jaundice, European medical researchers began to investigate its medicinal effects. It is now widely used to treat alcoholic hepatitis, liver cirrhosis, liver poisoning, and viral hepatitis, as well as to protect the liver in general from the effects of liver-toxic medications.

According to some (but not all) research evidence, treatment produces improvements in symptoms of chronic liver disease, such as nausea, weakness, loss of appetite, fatigue, and pain. Liver enzymes as measured by blood tests may improve, and if a liver biopsy is performed, there may be improvements on the cellular level. In addition, some studies have shown a reduction in death rate among those with serious liver disease.

The active ingredients in milk thistle appear to be four substances known collectively as silymarin, of which the most potent is named silibinin.¹ When injected intravenously, silibinin is one of the few known antidotes to poisoning by the deathcap mushroom, *Amanita phalloides*. Animal studies suggest that milk thistle extracts can also protect against many other poisonous substances, from toluene to the drug acetaminophen.^{2–7} One animal study suggests that milk thistle can also protect against fetal damage caused by alcohol.⁸

Silymarin appears to function by displacing toxins trying to bind to the liver as well as by causing the liver to regenerate more quickly.⁹ It may also act as an antioxidant and also stabilize liver cell membranes.^{10,11}

In Europe, milk thistle is often added as extra protection when patients are given medications known to cause liver problems. However, milk thistle failed to prove effective for preventing liver inflammation caused by the Alzheimer's drug Cognex (tacrine).¹²

Milk thistle is also used in a vague condition known as minor hepatic insufficiency, or "sluggish liver."¹³ This term is mostly used by European physicians and American naturopathic practitioners—conventional physicians in the U.S. don't recognize it. Symptoms are supposed to include aching under the ribs, fatigue, unhealthy skin appearance, general malaise, constipation, premenstrual syndrome, chemical sensitivities, and allergies.

Milk thistle may also offer some protection to the kidney.¹⁴

Highly preliminary evidence hints that milk thistle might help reduce breast cancer risk.¹⁵ Milk thistle is sometimes recommended for gallstones and psoriasis, but there is little to no evidence as yet that it really helps these conditions.

What Is the Scientific Evidence for Milk Thistle?

As noted above, there is considerable evidence from studies in animals that milk thistle can protect the liver from numerous toxins. However, human studies of people suffering from various liver diseases have often yielded mixed results.

Chronic Viral Hepatitis

Preliminary double-blind studies of people with chronic viral hepatitis have found that milk thistle can produce significant improvement in symptoms such as fatigue, reduced appetite, and abdominal discomfort, as well as results on blood tests for liver inflammation.^{17–19}

Appendix G: Tuberculosis
Latent Tuberculosis Infection:
A Guide for San Francisco Providers

Prepared by
Tuberculosis Control Section
San Francisco Department of Public Health

March 2003

This document was adapted (with permission) from Latent Tuberculosis Infection: A Guide for Massachusetts Providers prepared by the Medical Advisory Committee for the Elimination of Tuberculosis (MACET), November 2000.

Introduction

These guidelines were developed for primary care physicians and staff associated with community clinics and managed care organizations in testing for and treating latent tuberculosis infection. In addition, a step-by-step quantitative approach to evaluating the effectiveness of a program for testing and treating latent tuberculosis infection is included.

The recommendations on testing for and treating latent tuberculosis infection in Section I are based on local epidemiology, program experience, current National, State and local guidelines developed by the Centers for Disease Prevention and Control (CDC), the American Thoracic Society, the California TB Controllers Association (CTCA), the California Department of Health Services (CDHS), and the San Francisco TB Control Section (SFDPH).

Section 1

I. Testing for Latent TB Infection

Question 1. What is latent tuberculosis infection (LTBI)?

Latent tuberculosis infection is an asymptomatic state in persons who are infected with *Mycobacterium tuberculosis*. LTBI is detected as a result of skin testing or quantiFERON blood test among persons with risk factors for TB, such as public health investigations of contacts of infectious TB cases. For persons with untreated latent TB infection and intact immunity, the estimated risk of developing symptomatic tuberculosis disease is 5% to 10% over a lifetime, with about half of that risk occurring during the first year or two after infection. For persons who are immunocompromised by HIV co-infection, the estimated risk of developing disease increases to 5% to 10% per year.

Active TB disease is not often discovered in asymptomatic persons by tuberculin skin testing. However, finding LTBI provides an opportunity to treat and prevent progression to active disease (reactivation). Studies have shown that TB reactivation can be prevented with 60%-80% efficacy. Because of the high risk of TB prevalence in San Francisco, treatment of LTBI is considered an important public health strategy to prevent future cases in generations to come.

Question 2. What is the best test for LTBI, and how should test results be recorded?

Tuberculin skin testing with intermediate strength (5 TU) purified protein derivative (PPD), administered by the Mantoux intradermal technique (not by multiple puncture devices, such as Tine® or Mono-Vacc®), is the most readily available test for detecting LTBI. The test is administered by injecting 0.1 ml (5 TU) Tubersol® intradermally (not subcutaneously) into the ventral surface of the forearm. Forty-eight to 72 hours after the test is administered, the diameter of palpable or visible induration (raised swelling) should be measured transverse to the long axis of the arm and recorded in mm.¹ Note: redness without induration should be ignored.

The quantiFERON TB test is a whole blood assay for diagnosing TB infection. A minimum of 5cc of blood is required and must be processed within 12 hours after collection. The blood sample is mixed with 3 antigens (PPD, avian sensitin and a mitogen control). Interferon gamma responses are compared between antigens to determine a positive or negative result. Advantages of this test include, single patient visit, less subject to reader bias and interpretive error and automated lab results. Current CDC guidelines call for conservative use of this test until more research data is available.

Question 3: Who should be tested for LTBI in San Francisco?

Tuberculin skin testing should be reserved for persons who meet some or all of the following criteria:

- Are at high risk of TB infection (see Question 4).
- If infected, are at high risk of developing active TB.
- If infected, would be a candidate for treatment to prevent active TB.
- If they developed active TB, would place vulnerable contacts at risk.

¹ Two reading methods have been recommended. With one method, the arm is positioned so that a light shines tangentially over the skin reaction, highlighting any induration. The lateral edges of the visible induration are marked with a pen and measured with a millimeter (mm) ruler. With the second method, the lateral edges of the induration are determined by moving a ballpoint pen across the arm from each side until resistance is met. A mark is made and the diameter is measured with a mm ruler. With either method, only the measurement transverse to the long axis of the arm (not two dimensions) is recorded.

Question 4: Who is at high risk of TB in San Francisco today? (Please also refer to Appendix 3 SF guideline on “Who Should Be Screened”)

High-risk persons in San Francisco who should have a TB test include:

- Close contacts of known active pulmonary TB cases, or persons working or residing in congregate settings (shelters, jails, and some health care facilities) where known TB cases exist and others suspected or likely.
- Foreign-born persons from high-prevalence countries, especially if they are newcomers to the US (<5 yrs) and/or have additional medical or population risk factors.²
- Persons with fibrotic abnormalities on chest x-ray³ consistent with previous, untreated TB.
- Persons with clinical conditions associated with progression to active TB, such as HIV infection, silicosis, diabetes, chronic renal failure/hemodialysis, gastrectomy, jejunoileal bypass, solid organ transplantation (renal, cardiac), carcinoma of the head and neck, and being more than 15% underweight. Note: Some of these are common conditions. Testing should be reserved for persons with these medical conditions who are also likely to have been exposed to TB infection.
- Injection drug users.
- Homeless persons.
- Children who meet these criteria or who have been in regular contact with high-risk adults are also considered at risk.

Note: A patient questionnaire and physician assessment form for use in clinical settings to help determine a patient’s risk of tuberculosis and the need for a tuberculosis skin test can be found in Appendix 1 and 2, respectively).

Question 5: Should persons who have been vaccinated with BCG (bacille Calmette-Guerin) be tested for LTBI, and if tested, how should the results be interpreted?

BCG is a vaccine administered to more than 80% of children in the world as part of the Extended Program on Immunization. The vaccine is given primarily in countries with rates of TB infection much higher than those found in the US or Western Europe, and many persons who have previously received BCG also may have TB infection because BCG does not prevent TB infection. Efficacy of the BCG vaccine is very poor and estimated at 50% (Colditz et al., JAMA 3/94), although the vaccine does decrease TB death and disease dissemination (such as meningitis) by 75% in children. A single BCG at birth should not result in a positive test unless the test was administered within the past year. Persons who have received BCG should be tested for LTBI as otherwise indicated. Induration considered positive (using appropriate criteria – see Question 7) should be assumed to be due to TB infection, not BCG, and treatment should be recommended, unless contraindicated. BCG is not a contraindication to TB testing by skin test or quantiFERON. Consult local TB experts at SF TB Control (206-3387) if interpretation is confusing.

Question 6: Which persons, if they develop active TB, pose an especially high risk to the community?

² High-prevalence places from which San Francisco TB cases have come in recent years include, but are not limited to, China, Philippines, Southeast Asia, India, Mexico, Central America, and South America. TB case rates have doubled in the former Soviet Union in the past 10 years, and an increasing number of cases among recent arrivals is expected.

³ Prior tuberculosis disease can have a variety of nonspecific appearances. However, radiographically dense, upper lobe linear or nodular changes are characteristic. Hilar, lower lobe, and pleural densities are also seen, but are less specific for TB. For example, in the Ohio River Valley, hilar calcifications are more likely to represent previous histoplasmosis than TB. Apical pleural thickening without parenchymal scarring is specifically not associated with TB.

Persons with active TB who especially threaten public health include anyone working or living in a congregate setting with especially vulnerable persons, such as HIV/AIDS, cancer and dialysis patients, the elderly, homeless persons, newborn babies, and children 5 years of age and under.

Question 7: What tuberculin skin test (PPD) induration diameter is considered indicative of TB infection?

Two cut-offs for a positive PPD are used in California: >5 mm or >10 mm, depending on the risk of TB infection or disease in the individual or population being tested.

- 5 mm or greater PPD induration: is considered positive only in persons at the highest risk for infection or active disease. In this group, detecting all TB infections is considered more important than the risk of including some false positive reactions. Four high-risk subgroups are included:
 - Close contacts of active pulmonary cases.
 - HIV-immunocompromised persons (the risk of progression to active TB, if TB infected, is 5% to 10% per year).
 - Persons with fibrotic chest x-ray findings consistent with old TB.
 - Other immunocompromised individuals such as those with hematological malignancies or immunosuppressive treatment.
- 10 mm or greater PPD induration: Such tests are considered positive for all others. Included in this group are:
 - Foreign-born persons from high-prevalence countries (see footnote 2).
 - Disadvantaged low-income persons (malnutrition, crowded housing, medically underserved).
 - Persons over age 70 and under age 4.
 - Persons residing or having resided for extended periods in congregate settings known to be associated with TB transmission, such as SROs, shelters, jails, prisons, and detoxification or drug-rehabilitation centers and renal dialysis units.
 - Injection drug users.
 - Health care workers and other workers in facilities serving populations at increased risk of unsuspected TB disease, or engaged in high-risk procedures such as bronchoscopy, sputum induction, autopsies, mycobacteriology laboratory work, or work in homeless shelters.
 - Other high-risk professions, such as mortuary work.

Note: Out of date local and State regulations require TB screening of food handlers, teachers, and school entrants of the San Francisco Unified School District. Many of these individuals are not at increased risk but are required by law to be screened for TB.

Question 8. Who should be retested for LTBI in San Francisco and at what frequency?

Annual or regular testing should only be done if there is an ongoing risk of TB infection or exposure. Ideally, an annual TB symptom review and infection risk assessment should be done before deciding on repeating the PPD. However, from a practical standpoint it may be better to decide on the frequency of repeat testing by clinic and per clinic demographics, census tract and general TB risk factors of the population served. The clinic director and nurse manager should develop the best policy for their patient population. Risk factors for ongoing exposure include the following:

- Homelessness
- HIV infected persons with population risk factors for TB
- Congregate living or adult day care arrangement (long term care, jail, dialysis units, substance abuse treatment, HIV housing, mental health facilities and halfway homes, etc.)
- Health care workers and individuals working with the groups previously listed

- Individuals living and working in the Tenderloin/SoMkt and Chinatown areas

Question 9. Can repeat skin testing for TB cause a positive reaction in an uninfected person?

No, PPD contains too little TB antigen to cause hypersensitivity to future skin testing by itself. However, waning hypersensitivity due to past infection to TB, may cause a “false negative” when first tested. A repeat test can be boosted by a subsequent PPD test, resulting in induration indicative of true infection. The repeat PPD may appear to have converted from negative to positive. These reactions reflect true hypersensitivity, possibly due to TB infection, but not recent infection. In addition to avoiding repeat TB testing, unless indicated, using a 2-step baseline skin test (see Question 10) and using a change in induration of 10 mm as criteria for conversion, are both recommendations intended to minimize false skin test conversions.

Question 10. What is 2-step PPD testing, and when is it indicated?

2-step testing should be done at the beginning of the series of repeat or regular ongoing testing to prevent the misinterpretation of boosted responses as PPD conversions (new TB infection). It should be done if the individual has not had a PPD in the past 1-2 years. The 2nd test should always be done between 1 and 4 weeks after the first test placed.

2-step testing may also be advised for individuals over 55 years of age who have medical and population risk factors for TB disease.

Note: Using the quantiFERON blood test eliminates the need for 2-step testing and will not result in boosted reactions. SF TB Control recommends its use when serial testing is needed.

Question 11. Can a PPD test be read after 72 hours? Can a PPD be placed on a Thursday and read on a Monday at 96 hours?

Yes, a PPD can be read up to a week after placement if the reaction is positive. However, a negative result should not be read after 72 – 96 hours. Although the practice of placing PPDs on a Thursday and reading it on Monday (96 hours) strays from the State and CDC guidelines, local SF experience and data show that reading the PPD at 96 hours will miss less than 3% of PPD positives. Therefore, SF TB Control will not frown upon this practice since it is a practical approach for clinics that are closed on the weekend. This will allow placement of PPDs 5 rather than 4 days a week.

II. Treatment of Latent TB Infection

Question 12: Who should be treated for latent TB infection?
(Please also refer to Appendix 4: SF LTBI Treatment Guidelines)

Anyone at high risk for TB who has a positive test for latent infection is a candidate for treatment, if they also fulfill the following criteria:

- No symptoms, signs, or radiographic evidence of active TB.⁴ ACTIVE DISEASE MUST BE RULED OUT prior to treatment by chest x-ray and medical evaluation. In addition, asymptomatic patients with fibrotic abnormalities on chest x-rays need 3 negative sputum cultures to rule out TB.

⁴ In the absence of symptoms suggesting pulmonary or extrapulmonary TB, only the chest x-ray should be part of a clinical work-up for LTBI. Other tests, such as sputum or urine culture, have an extremely small yield, and are subject to false-positive results if done routinely. The erythrocyte sedimentation rate (ESR) is neither sensitive nor specific for active TB.

- Willing to complete a full course of therapy (treatment of LTBI is always optional for the patient, even if strongly recommended).
- Available to be clinically monitored during the full course of treatment (that is, not about to leave the country).
- No medical contraindications to treatment, such as severe liver disease, drug hypersensitivity, or medical conditions that make adherence unlikely, such as mental illness or alcoholism. (Where available, directly observed treatment can increase adherence for high-risk persons.)

Question 13: What are the currently recommended treatments for LTBI in San Francisco?

INH daily or twice weekly for 6 months in adults and children ≥ 15 yrs of age

- Considered the optimal treatment in terms of program efficacy and treatment completion.
- Short duration encourages initial acceptance and adherence to complete treatment.
- The twice-weekly regimen must be supervised by SF TB Control or by a provider using directly observed therapy.
- INH daily or twice weekly for 9 months
- Recommended for children⁵ <15 years and adults, with HIV co-infection and fibrotic chest x-ray abnormalities suggesting old TB.
- The twice-weekly regimen must be done using directly observed therapy.

INH/Rifampin (RIF) daily for 4 months

Considered the treatment of choice for individuals with fibrotic chest x-ray abnormalities suggesting old TB.

RIF/PZA for 2 months

- May be prescribed to HIV-infected individuals (see note below).
- Rifabutin may be substituted for Rifampin if the HIV patient is on protease inhibitors (PIs) or non-nucleoside reverse transcriptase inhibitors (NNRTIs).

Note: SF TB Control does not advocate the use of the 2-month RIF/PZA treatment regimen in any group other than HIV infected individuals. SF TB Control treatment guidelines differ from CDC guidelines and were developed by expert consensus based on the local epidemiology, treatment outcomes and program experience particular to the city and county of San Francisco.

Question 14: How do I decide which treatment to choose for my patient?

Choosing a treatment is based on several considerations, such as

- Efficacy: All 4 treatments are considered efficacious, although the 9-month INH and 2-month RMP/PZA regimens are considered more efficacious than the 6-month INH treatment or the 4-month RMP regimen alone.
- Medical considerations:
 - Active liver disease: postpone therapy or consider RIF alone.
 - Essential medications that interact with RIF (including HIV therapy) – avoid RIF or reconsider treatment.
 - Birth control pills and implants – avoid rifampin or find alternative birth control.

⁵ Due to the absence of children in clinical trials of shorter, Rifampin-based regimens, only INH for 9 months is recommended for children with LTBI.

- Pregnancy – INH and rifampin are considered relatively safe (category C) during pregnancy, when necessary, but are generally reserved for close contacts and HIV-infected persons; B6 is recommended with INH. PZA is contraindicated.
- Breast feeding – not a contraindication to therapy, but some patients prefer to wait until completion of breastfeeding.
- Daily alcohol use.
- Logistical considerations: Persons who will be moving from the area or who are in a supervised setting for a limited duration (e.g., detox, rehabilitation, prison) may complete a shorter regimen. Persons who can be supervised over a longer period (e.g., in prisons) may be given the 9-month INH treatment without fear of non-adherence.
- Age: Risk of INH-induced hepatitis increases with age. Previous ATS/CDC recommendations limited INH to persons under age 35 years, over 35 years only with other risk factors such as recent conversion, HIV co-infection, or x-ray abnormalities suggesting old TB. The current ATS/CDC recommendations assume that because only high-risk persons are tested, INH is warranted at any age.
- Cost: INH is much less expensive than RIF/PZA or RIF alone. Drug intolerance, drug interactions, and laboratory tests are among the other costs to be considered – if cost is an issue. In San Francisco, treatment for LTBI is available free of charge through the DPH TB Clinic located on the San Francisco General Hospital campus.
- Patient choice: In the absence of factors dictating one regimen or another, patients often have strong opinions about taking one INH pill daily for 6 or 9 months, 2 RIF capsules plus one INH pill daily or 2 rifamate capsules (contains both INH and rifampin) daily for 4 months.

Question 15: What are the appropriate dosages for the 4 LTBI treatment options, and how should they be prescribed?

The dosages are listed below. (Please also refer to Appendix 4: SF LTBI Treatment Guidelines)

- INH: (50, 100, 300 mg pills)
 - Adults: 300 mg daily, or 900 mg twice weekly.
 - Children: 10-20 mg/kg up to 300 mg daily, or 20-40 mg/kg twice weekly up to 900 mg twice weekly.
- Rifampin: (150, 300 mg pills) 600 mg daily, 600 mg twice weekly (unlike twice weekly INH, dose is not increased).
- Rifabutin:¹³ (150 mg pills) 300 mg daily, 300 mg twice weekly (rifabutin daily or 2/wk with dose adjustments according to the type of PI or NNRTI).
- Pyrazinamide: (500 mg pills) 15-20 mg/kg daily, up to 2 gm

Question 16: How should I monitor safety and adherence during LTBI treatment? (Please also refer to Appendix 2: SF LTBI Treatment Guidelines. A summary table is provided on the last page)

Monitoring treatment for LTBI serves 2 purposes – to encourage and monitor adherence, and the early detection of side effects. Recommended monitoring varies with the 4 regimens. No more than a month supply should be dispensed at a time and monthly visits are recommended for mono-INH and INH/RIF regimens.

INH: Possible complications of INH therapy include the following.

Hepatitis. INH induced hepatitis occurs with increasing frequency with age. However in over 11,000 patients receiving INH in a public health clinic, Nolan reported a very low hepatitis rate of only 0.1% (JAMA 1999 281;

¹³ Rifabutin should be substituted for rifampin in HIV/AIDS patients who are being treated with anti-retroviral therapy (see Question 16).

1014-18). Only clinical monitoring for symptoms (fatigue, malaise, and nausea) was used on a monthly basis. All confirmed cases of hepatitis recovered with prompt cessation of the drug.

- Most patients can be followed without baseline or routine follow-up liver function tests if they can be closely followed clinically and questioned at least monthly about symptoms.
- Indications for baseline and periodic biochemical monitoring include patients with known abnormal liver function or known liver disease, the concurrent use of other hepatotoxic agents and chronic alcohol use.
- PATIENTS MUST BE instructed to stop INH and call their provider IMMEDIATELY for further instructions if symptoms of anorexia, nausea and fatigue develop. (The rare fatalities associated with INH hepatitis have all been associated with continued INH ingestion despite hepatitis symptoms.) The provider should discontinue INH if transaminase elevations exceed 3 – 5 times normal in the absence of symptoms (the higher threshold should be used for HIV patients).

Peripheral neuritis. Uncommon, even among patients not receiving pyridoxine (vitamin B6). However, B6, 10-50 mg daily is recommended for the elderly, diabetics, HIV+ patients, individuals with neurologic disease, poor nutrition (e.g., alcoholics) or with increased nutritional needs (e.g., pregnant or breastfeeding women).

- Rifampin (RIF): Although rifamycins have been associated with a wide range of side effects, including hepatocellular or cholestatic hepatitis, neutropenia, and a flu-like syndrome, complications are not common. Compared to INH, RIF (when used alone) causes much less hepatitis and has the best safety profile of the major anti-tuberculous agents. However, deaths and severe hepatitis have been reported in patients using the 2 month RIF/PZA regimen and therefore more frequent clinical and biochemical monitoring is recommended when using this regimen. Other side effects of RIF and rifabutin include:
 - Discoloration of the urine, sweat and tears (orange-red color)
 - Drug-drug interaction caused by the induction of hepatic microsomal enzymes (RIF effect >> rifabutin). Accelerated metabolism is seen with other important drugs, including methadone, birth control pills and implants, coumadin, some antihypertensives, protease inhibitors (PIs), nonnucleoside reverse transcriptase inhibitors (NNRTIs), and many others.
- Baseline CBC, liver function tests and uric acid (if on PZA concurrently) is recommended for persons on RIF or rifabutin when other TB drugs are used concurrently (eg. INH or PZA). Monthly clinical monitoring is recommended for patients on the 4-month RIF/INH regimen, whereas clinical and biochemical monitoring (AST and bilirubin) at 2, 4, 6 and 8 weeks is recommended for patients on the 2-month RIF/PZA regimen.

Question 17: How much treatment of LTBI can be missed before the patient must start over?

This question applies to all 4 regimens, but is of greatest concern with the 2-month regimen. Ideally, patients should take the equivalent of the entire treatment course even if additional time is needed due to interruptions. Some clinical judgment is needed, since clinical trial data is not available to support the efficacy of the countless possible patterns of drug ingestion. For the 2-month regimen, it is especially important for the patient to take at least 60 doses within a period of 3 months, which is to say that a total of 30 doses could be missed without restarting the regimen. For the 9-month INH regimen, at least 270 doses should be ingested within 12 months. For the 6-month INH regimen, at least 180 doses should be ingested within 9 months. Finally, for the INH/rifampin regimen, at least 120 doses should be administered within 6 months. With any regimen, clinical re-evaluation is indicated for interruptions of greater than 2 months.

Question 18: If a patient will not or cannot take treatment for LTBI, what is appropriate follow-up?

Patients without medical risk factors who cannot or will not take treatment for LTBI should have an annual symptom review and TB risk factor assessment as part of routine health maintenance. Neither periodic clinical exams nor periodic chest x-rays have been shown to be effective in detecting TB reactivation before symptoms develop. However, patients with medical risk factors for TB progression or reactivation should be followed per guidelines in Appendix 5. Patients should keep a record of their positive PPD and understand its significance.

Patients should be instructed to seek medical care if they develop an unexplained cough that lasts more than 2 weeks, and to remind their provider of their positive PPD status. Patients who complete a course of treatment for LTBI require no further follow-up.

(Please also refer to Appendix 5: Follow-up Protocols for Patients with a Positive PPD)

Question 19: When should I seek consultation with a specialist?

Primary care providers are encouraged to request consultation from San Francisco TB Control Clinic MDs (415-206-8524), for the following reasons:

- TB drug complications and interactions.
- Treatment of LTBI in pregnancy.
- Treatment of LTBI in patients on complex therapy for HIV.
- Treatment of LTBI or active TB when drug resistance is likely (contact of a known drug-resistant case).
- Diagnosis and management of active TB, including interpretation of mycobacteriology laboratory data.

III. Public Health Aspects

Question 20: Is LTBI reportable to the health department?

LTBI is not reportable to the health department. However, active TB and patients suspected of active TB are reportable by law, pending final diagnosis. Cases and suspect cases can be reported to the San Francisco TB Control Surveillance Unit by calling (415) 206-8524.

Question 21: What public health resources are available to me and to my patients?

The San Francisco TB Control Program provides comprehensive TB services for persons with both active and latent TB infection in San Francisco. The San Francisco TB Clinic located on the SFGH campus offers medical expertise, radiography, mycobacteriology, and free TB therapy for both latent TB infection and disease. Contact investigations of infectious cases and directly observed therapy are essential public health services. For active TB cases, case management is the shared responsibility of the treating physician and the local TB Control program staff with the support of culturally diverse outreach workers. For LTBI, initial evaluation, medications, and essential biochemical monitoring are provided. Consultation for private physicians treating cases of active TB and LTBI is another service of the San Francisco TB Control Program.

The main SF TB Clinic is a referral/evaluation site and does not offer TB skin testing for the public (with the exception of contact investigation). However, our satellite outreach sites in Chinatown (CHOPS) and the Tenderloin (TOPS) can provide TB testing for high-risk community members.

Chinatown Outreach Prevention Services (CHOPS): 1490 Mason Street, Suite #236. San Francisco, CA 94133. (415) 705-8549.

Tuberculosis Outreach Prevention Services (TOPS): 973 Market Street, Suite #205. San Francisco, CA 94103. (415) 597-7950.

Question 22: How do I refer a patient to the San Francisco TB Clinic for medical evaluation and/or LTBI treatment?

If you work at one of the CHN community clinics, a TB 47 triplicate referral form should be filled out with the pink copy given to the patient and other copies sent to the TB Clinic. For other providers, a letter of referral will suffice with documented TB test, chest x-ray (if available) symptom review and services requested.

San Francisco TB Clinic: 1001 Potrero Avenue, San Francisco General Hospital Campus, Bldg. 90, Ward 94. San Francisco, CA 94110. (415) 206-8524.

Question 23: What guidelines are available and how can I get them?

San Francisco TB Control guidelines and most recent epidemiologic bulletin are available on the San Francisco DPH website at the following address: <http://www.dph.sf.ca.us/PHP/TB/TB.htm>

Section 2 - Evaluation of Program Performance

The primary purpose of tuberculosis skin testing of healthy children and adults is to identify those with latent infection whose future risk of active disease can be reduced by preventive treatment. Preventing active tuberculosis also decreases the risk of the spread of tuberculosis to others. The prospect of tuberculosis elimination will be enhanced.

In order to be effective, a program of testing and treatment of latent tuberculosis infection (LTBI) requires completion of a number of steps, and the success of each step can be defined by a quantitative performance measure. Each office, health center, and clinic should maintain its own statistics that can serve as the basis for monitoring and continually improving performance. Statistics should be calculated every three months and annually. These statistics should be available for review by the San Francisco TB Control Program.

At some future time, a tuberculosis performance measure might be added to current Health Plan Employer Data and Information Set (HEDIS) parameters used to assess the quality of preventive health care, such as childhood immunization, Pap smear, and mammogram rates.

Step 1: Identify People at High Risk for Tuberculosis Infection

Risk of exposure to tuberculosis should be determined for every patient on entry into the health care system and at regular intervals thereafter. Depending on circumstances, a health care provider may decide to determine risk of tuberculosis exposure through individual clinical history taken or by administering a formal tuberculosis risk questionnaire (Section I, Appendix 1). Definition of risk categories should be according to the recommendations of the Centers for Disease Control and Prevention, the American Academy of Pediatrics, and the San Francisco TB Control Program.

Performance Measure

$$\text{Proportion Screened} = \frac{\text{Number of People Screened for Tuberculosis Risk}}{\text{Number of People Seen}}$$

Step 2: Test People at High Risk for Tuberculosis Infection

The Mantoux test (intermediate PPD), (5 TU), not multiple puncture tests (such as Tine and Mono-Vacc), must be used.

Performance Measure

$$\text{Proportion Tested} = \frac{\text{Number of High Risk People Tested}}{\text{Number of High Risk People Identified}}$$

Step 3: Read Skin Test Results

All tests results, positive or negative, must be read by qualified health care personnel. Tests should be read between 48 and 72 hours after administration. The diameter of induration, not redness, is the basis of the reading. Test results should be measured in millimeters and interpreted as “positive” or “negative” according to the criteria recommended by the Centers for Disease Prevention and Control, the American Academy of Pediatrics, and the San Francisco TB Control Program.

Performance Measure

$$\text{Proportion of Tests Read} = \frac{\text{Number of Tests Read}}{\text{Number of People Tested}}$$

Steps 4: Obtain Chest Film for People with Positive Tuberculosis Skin Tests

People with a positive tuberculosis skin test should have a medical evaluation and chest film. A chest film is needed to distinguish latent tuberculosis infection from active disease.

Performance Measure

$$\text{Proportion of People with Positive Tuberculosis Skin Test} = \frac{\text{Number of Positive People Who have Chest Films}}{\text{Number of People with Positive Tests}}$$

Step 5: Initiate and Complete Preventive Treatment

Current recommendations of the CTCA/CDHS and the San Francisco TB Control Program on choice and duration of preventive treatment regimen, frequency of visits, and appropriate laboratory monitoring should be followed. In evaluating program success, use one year as the interval within which preventive treatment should be completed.

Performance Measure

$$\text{Proportion Treated} = \frac{\text{Number of Infected People Who Complete Treatment}}{\text{Number of People with Latent Tuberculosis Infection}}$$

Thus, program success can be evaluated through a sequence of performance measures. Ideally, every person seen would be asked about tuberculosis risk factors, every high risk person would be skin tested, every skin test would be read, every person with a positive skin test would have a chest film, and every person with latent tuberculosis infection would start and complete a recommended course of preventive treatment within one year.

[Sub] Appendix 1: Patient Tuberculosis Risk Questionnaire

The Tuberculosis Risk Questionnaire appears on the following page. It can be reproduced for distribution as needed.

Tuberculosis Risk Questionnaire

A person who has been infected with Tuberculosis (TB) may show no outward symptoms. However, infection can later lead to severe illness. To detect the problem before a person becomes ill, we perform a tuberculosis skin test. Instead of testing all people, we recommend that only some people should get a TB test. If a test is warranted, a person will be tested with the intermediate strength PPD (Mantoux) skin test or quantiFERON blood test. The less accurate multiple puncture skin tests, such as the Tine or Mono-Vacc, is not recommended.

To help your health care provider determine whether you need to be skin tested, please answer the following questions.

	YES	NO
Have you lived with or spent time with anyone who possibly or definitely had tuberculosis?	☐	☐
Does anyone living in your household have a positive skin test for tuberculosis?	☐	☐
Did you or anyone living in your household come to the United States from another country?	☐	☐
Are you homeless, living either on the street, SRO hotel or in a shelter, or do you work or spend time with homeless people?	☐	☐
Do you or does anyone in your household have AIDS or HIV infection?	☐	☐
Do you or does anyone in your household use intravenous drugs or other street drugs?	☐	☐
Have you lived or worked in a hospital, correctional facility, substance abuse facility, nursing home, or mental institution in the past 12 months?	☐	☐
Do you live or work in the Tenderloin/SoMkt or Chinatown districts	☐	☐

If you have had a “positive” skin test for tuberculosis in the past, inform your health care provider. You will not need another test.

IF YOU HAVE ANY QUESTIONS ABOUT YOUR NEED FOR A TUBERCULOSIS SKIN TEST, PLEASE ASK YOUR HEALTH CARE PROVIDER!

Appendix 2: MD Risk Assessment Form

The Tuberculosis Risk Assessment and PPD Form appears on the following page. It can be reproduced for distribution as needed

Date: ____/____/____ day month year MD Tuberculosis Risk Assessment and PPD Form	Patient Name: D.O.B. MR#
1. Where was the patient born? ☐ USA ☐ Mexico /South / Central America ☐ Asia ☐ SE Asia ☐ Africa ☐ Eastern Europe ☐ Western Europe 2. If not born in USA. When did they arrive in the USA? ☐ Within the past 2 years ☐ 2-5 years ago ☐ More than 5 years ago	1. Please check all that apply: Has the patient: ☐ Ever been homeless or lived / worked in a shelter ☐ Lived / worked in a nursing home ☐ Ever been an inmate or worked in a jail / prison ☐ Ever been a healthcare worker ☐ Has the patient had any vaccinations recently? What? _____ ☐ Ever drunk alcoholic drinks? How many a week? ☐ None ☐ 1-4 ☐ 4-6 ☐ >6 ☐ Ever used IV drugs? Any other drugs? What kind? _____ ☐ Ever had TB or been treated for active or latent TB? ☐ NONE of the above
3. Has the patient ever had a skin test for Tuberculosis? ☐ Yes ☐ No ☐ Not Sure If YES, Where: _____ (Clinic, Hospital, School, Etc...) When: ____/____/____ day month year Result: ☐ Positive ☐ Negative ☐ Not Sure	2. <i>Has the patient had contact with/lived with persons</i> ☐ Sick with Tuberculosis? ☐ That were born or travel frequently outside of the USA. Where? _____ ☐ That use drugs or drink alcohol? ☐ NONE of the above
4. Has the patient ever had a chest x-ray? ☐ Yes ☐ No ☐ Not Sure If YES, Where: _____ (Clinic, Hospital, School, Etc...) When: ____/____/____ day month year	3. <i>Does the patient have or have they ever had any of these conditions:</i> ☐ Diabetes ☐ Immune system disorder (e.g. leukemia, lymphoma) ☐ Steroid treatment for > than 2 weeks ☐ Received chemotherapy for cancer ☐ Silicosis or lung disease from mining / sand blasting ☐ Kidney failure that required dialysis ☐ Organ transplant or blood transfusions ☐ Weight loss without trying, poor appetite and /or poor nutrition, weight >10% below ideal ☐ Ever had a positive test for HIV infection or AIDS ☐ NONE of the above
5. Tuberculosis usually causes one or more of these symptoms. Does the patient have any of the following: ☐ Cough for longer than three weeks ☐ Fevers ☐ Night Sweats ☐ Fatigue ☐ Loss of Appetite ☐ Other ☐ Loss of Weight ☐ NONE	

The SF TB Control screening guidelines appear on the following page. It can be reproduced for distribution as needed.

TB SCREENING IN SAN FRANCISCO

Community Clinics are important partners in TB control because of the high rates of tuberculosis in San Francisco. In assessing who should be screened, population and medical risk factors for TB (listed below) should be asked and/or determined as part of your patient's routine medical evaluation. The following information outlines who should be screened, the interval of screening and who should be referred to the TB Clinic at SFGH.

WHO SHOULD BE SCREENED FOR TB WITH A SYMPTOM REVIEW AND SKIN TEST or QUANTIFERON TB BLOOD TEST:

- Newcomers to the US (<5 yrs) from Asia and other endemic TB countries (SCREEN REGARDLESS OF AGE)
- Foreign born under the age of 35 from TB endemic areas
- Individuals with medical risk factors for TB reactivation (diabetes, renal failure, cancer, silicosis, malnutrition, HIV or on immunosuppressive drugs)
- Patients found to have an abnormal chest x-ray consistent with old or active TB without prior evaluation or treatment (e.g., CXR=upper lobe fibrotic infiltrates. Exclude: those with isolated granulomas or pleural lesions. Include: those with parenchymal infiltrates even if stable over time)
- Patients with unexplained chronic cough or weight loss
- Renal dialysis patients
- Residents and employees of high-risk congregate sites (e.g., nursing homes, jails, prison, shelters, substance abuse treatment facilities and hospitals)
- Homeless individuals
- Injection drug users
- Patients with planned or are post organ transplant
- Contacts to active TB cases
- Children who have the above risk factors or live with adults with the TB risk factors or travel to TB endemic countries for >2weeks

FREQUENCY OF TB TESTING: Individuals should be retested on a regular basis if there is an ongoing risk of TB exposure or infection. The frequency of testing should depend on the degree of risk of TB exposure. (E.g. TB Clinic and SFGH ER staff get tested every 6 months while primary care clinic staff get tested annually)

WHO SHOULD BE REFERRED TO TB CLINIC, WARD 94, SFGH?

- ALL individuals listed above with a positive quantiFERON TB blood test or tuberculin skin test reading of 10 millimeters or more, unless HIV+ or immunocompromised (5 mm considered positive)
- ALL individuals with an abnormal chest x-ray (described above) consistent with old or active TB regardless of skin test results
- ALL individuals with TB symptoms regardless of skin test results

The SF TB Control protocol for following-up on patients with a positive PPD appears on the following page. It can be reproduced for distribution as needed.

FOLLOW-UP PROTOCOLS FOR PATIENTS WITH A POSITIVE PPD

Patients with prior adequate treatment for latent TB infection (LTBI)

1. Adequate LTBI treatment decreases the lifetime risk of reactivation TB to less than 1.6 percent. Therefore, patients with prior treatment do not need rigorous follow-up unless they have TB symptoms or are re-exposed to individuals with contagious pulmonary TB.
2. Adequate treatment is defined as:
 - Adults with normal CXR: 6-9 months of INH
 - Immune compromised adults or patients with abnormal CXRs consistent with old inactive TB: 9 months of INH or 4 months of INH and rifampin
 - Children: 6-9 months of INH (current ATS and SF recommendation for LTBI Rx is 9 months of INH. SF recommendations before 2001 was 6 months)

Recommendation: In general, patients with prior adequate LTBI treatment do not need medical follow up or CXRs unless they have symptoms of TB, are re-exposed to individuals with contagious pulmonary TB or a CXR is required by their work or school.

Patients without prior adequate treatment or for LTBI

Risk of TB reactivation in these individuals will depend on medical risk factors for TB.

Recommendations:

If there are no medical risk factors present: An annual TB symptom review and risk assessment should be performed as part of routine health maintenance. A CXR should be done ONLY if symptoms are present or TB screening is required for entry into a congregate setting (such as a residential facility, nursing home, shelter, drug treatment program, school, etc.). If the patient is asymptomatic AND without new medical risk factors, a normal CXR done within the prior 6-12 months should be sufficient for required screening.

If medical risk factors are present: The frequency of TB screening and repeat CXRs should depend on the risk of disease. The listed groups below should be offered LTBI treatment because they represent TB Control's highest priority for prevention. However, if treatment is rejected, these patients should be educated on the signs and symptoms of TB and followed-up as described below:

- HIV infection or other severe immune compromise (e.g. cancer chemotherapy, organ transplant, hematological malignancies, chronic prednisone 15mg/day > 2wks): Symptom review every 3 months and CXR every 6 months
- PPD conversion to positive within the past 2 years: CXR and symptom review every 6 months for a 2-year period
- Arthritis or autoimmune disease being treated with immune modulating medication: Symptom review every 3-6 months and CXR annually
- End-stage renal disease, silicosis, jejunoileal bypass or carcinoma of the head or neck: Symptom review every 6 months and CXR annually

- Evidence of old inactive TB on CXR: Annual symptom review at minimum. Would also have a low threshold for sputum collection and repeat CXR if any chronic pulmonary symptoms are present
- Other medical risks: (diabetes, injection drug use, gastrectomy, under weight by >15%): Annual symptom review at minimum and CXR if symptomatic without definite etiology

Any patient regardless of prior treatment should get a CXR and medical evaluation if TB symptoms of chronic cough and/or unexplained weight loss of more than 5 lbs are present.

Treatment of latent TB infection (LTBI) is advised for the following:

Regardless of age: HIGHEST PRIORITY

1. All household or other close contacts of persons with current pulmonary tuberculosis:
 - a. High-risk contacts including children under 5 years and immunocompromised individuals (HIV infection, chronic corticosteroids, chemotherapy, etc) should receive treatment for LTBI regardless of tuberculin skin test (TST) reaction if the index case is smear or culture (+) for M. tuberculosis:
 - b. Refer to Contact Investigation Guidelines for other groups

At 3 months, contacts with a negative TST (<5mm) will be retested. If the non-immuno-compromised contact is still negative (includes children) and the index case is on TB chemotherapy, treatment of LTBI may be discontinued. Immunocompromised close contacts should complete a full course of treatment regardless of repeat TST results since test results may be unreliable.

2. Tuberculin converters:

Definition of conversion: Increase in the size of the tuberculin reaction by at least 10 mm from less than 10 mm to 10 mm or more within a 2 year period.

3. TST reactors (5mm or greater) with abnormal chest films consistent with dormant tuberculosis that have not had adequate prior therapy.

It is important to exclude current disease by bacteriologic evaluation and/or a review of serial x-rays.

4. All TST reactors (5mm or greater) with HIV infection or at high risk of HIV infection.

Homosexual/bisexual men and injection drug users are at high risk of HIV infection. Unless the HIV test is known to be negative and the patient does not belong to other high-risk groups, they should be encouraged to take INH.

5. TST reactors (10mm or greater) who are newcomers to the U.S. (less than 5 years in U.S.), from areas of the world with a high TB incidence (includes Central and South America, Asia, Philippines, the former Soviet Union, and Africa).
6. TST reactors (10mm or greater) who are injection drug users (HIV testing should be strongly encouraged for all individuals in this group).
7. All TST reactors (10mm or greater) who are homeless or have a transient living arrangement (Note: Because of increased TB disease susceptibility and probability of TB exposure in group settings, HIV testing should be strongly encouraged for all homeless tuberculin reactors).
8. TST reactors with special medical situations of increased risk. These include prolonged corticosteroid therapy (>15mg daily of prednisone or equivalent for 2-4 weeks), immunosuppressive therapy, leukemia or lymphoma, insulin-dependent diabetes, silicosis, post-gastrectomy (especially with weight loss) and renal failure with uremia.

Note: a 5 mm cut point is considered positive for persons who are on immunosuppressive therapy, corticosteroids, or have leukemia or lymphoma. A 10mm cut point should be used for other medical risk groups.

9. All TST reactors (10mm) under 21 years of age.

Less than 35 years of age:

1. Foreign-born TST reactors (10mm or greater) living in the U.S. greater than 5 years who come from areas of the world with a high TB incidence (includes Central and South America, Asia, Philippines, the former Soviet Union, and Africa).
2. Post-partum women with significant TST reactions (10mm or greater)

INH is not contraindicated during pregnancy but in general should be delayed until after delivery unless additional risk factors such as HIV infection, being a close contact or recent skin test conversion exists. Nursing is not a contraindication to INH.

3. TST reactors (10mm or greater) for whom the public health consequences of developing tuberculosis disease would be of special importance; i.e. persons who work with small children, such as day care providers, health care providers, teachers, school bus drivers, etc.
4. TST reactors (10mm or greater) who are 21 - 35 years old. As a public health policy, we are not administering INH to this age group without other risk factors. However, if an individual wishes to take INH after reviewing risks and benefits, we will offer the therapy.

Contraindications:

1. Known previous adverse reactions INH, rifampin, or pyrazinamide (PZA).
2. Unstable liver disease, with AST greater than 3 times normal. (for INH or PZA only)
3. History of gout when using PZA

Recommended Treatment Regimens:

For Dosages, see attached chart on page 4.

1. INH is prescribed for 9 months for:
 - a. Children under age 15,
 - b. Immunocompromised reactors (especially HIV seropositive persons)
2. The 2 month regimen of daily rifampin/PZA may be prescribed to:
 - a. HIV infected individuals [rifabutin may be substituted for rifampin if the HIV patient is on protease inhibitors (PIs) or non-nucleoside reverse transcriptase inhibitors (NNRTIs)]
At the TB Clinic physician's discretion: (must be under TB Control DOT program)
 - b. Homeless (prioritize TST converters and contacts)
 - c. Incarcerated patients
3. Persons with abnormal chest films consistent with dormant tuberculosis may be treated with 4 months of the multi-drug regimen of rifampin /INH or 9 months of INH alone
4. Other groups will receive 6 months of INH

Vitamin B6:

The routine use of B6 is recommended only for persons at high risk of developing peripheral neuropathy: persons with diabetes, uremia, chronic alcoholism, severe malnutrition, HIV infection, pregnant women and the aged.

BCG:

In most situations prior BCG history will be ignored when considering INH recommendations. Reactions over 10 mm are unusual several years after vaccination. If BCG has been given within 1 year of the tuberculin skin test, the PPD can be repeated after 1 year has passed before deciding on treatment.

Monitoring:

1. Baseline liver function tests (AST, Alkaline phosphatase and total bilirubin) are required only for individuals with:
 - a. Known liver disease
 - b. Alcoholism
 - c. Injection drug use
 - d. HIV infection
 - e. Those placed on any multi-drug regimen (INH/RIF for 4 months, RIF/PZA for 2 months)
2. Complete blood count, creatinine, and uric acid at baseline and monthly are required for those placed on the 2-month rifampin/PZA regimen.
3. If baseline results are abnormal, repeat measurements should be obtained monthly until documented stable or if the patient has symptoms of adverse reactions.
4. For individuals on the 2-month rifampin/PZA regimen, serum aminotransferase and bilirubin should be repeated at 2, 4 and 6 weeks of treatment.

DRUGS FOR LATENT TUBERCULOSIS INFECTION (LTBI)

Drug	Supplied	Dose/frequency	Duration	Side Effects	Monitoring	Comments
Isoniazid (INH):	Tabs: 300mg 100mg Susp: 50mg/5ml Inj: 100mg/ml	<u>Adults:</u> 300mg daily or 900mg 2X weekly <u>Children:</u> 10 – 15mg/kg daily (>20kg = 300mg) or 20-30mg/kg 2 X weekly	<u>Adults:</u> 6 months (180 doses) <u>Children, HIV infected, immuno-compromised or has CXR consistent with old inactive TB :</u> 9 months (270 doses)	Hepatitis; peripheral neuropathy; mild CNS effects; skin rash; increased Dilantin levels.	LFTs (not routine) unless known or suspected liver disease or other hepatotoxic drugs used concurrently.	Give pyridoxine 25mg/day to prevent neuropathy in elderly, D.M., nutritionally deficient, renal disease, pregnancy, HIV, alcoholics.
Rifampin (RIF):	Caps: 300mg 150mg	<u>Adults:</u> 10mg/kg up to 600mg PO daily <u>Children:</u> 10 – 20mg/kg up to 600mg PO (use RIF only when INH cannot be used because of toxicity or INH drug resistance)	<u>Adults:</u> 4 months (120 doses) when used w/ INH) <u>HIV+ adults only:</u> 2 months (60 doses) when used w/ PZA	Orange discoloration of secretions; cholestatic or hepatocellular hepatitis; febrile (flu-like) reaction; induces hepatic enzymes, drug interactions; thrombocytopenia; skin rash.	LFTs (not routine) unless known or suspected liver disease or other hepatotoxic drugs used concurrently. Baseline CBC.	Warn patient about orange discoloration of urine and other body secretions. Discoloration of contact lens. Induces hepatitis microsomal enzymes.
Rifabutin:	Caps: 150mg	<u>Adults only:</u> 5 mg/kg up to 300mg daily	As for rifampin	As for rifampin except hepatic enzyme induction less; risk of uveitis when used with macrolides, PI's and azole antifungal agents.	As for rifampin.	As for rifampin.
Pyrazinamide (PZA):	Tabs: 500mg scored	<u>Adults only:</u> 15 – 20mg/kg PO	<u>HIV+ adults only:</u> 2 months (60 doses) when used w/ RIF	Hepatitis; GI upset; hyperuricemia; arthralgias;	LFTs and uric acid at start of therapy and LFTs every 2 weeks when used with rifampin.	Dose adjustment needed for renal disease. Safety not established in pregnancy.

				photosensitive dermatitis.		

Appendix H: Hematologic Definitions

Basophilic stippling

An RBC that contains small dot like aggregates of cytoplasmic ribosomes scattered throughout the hemoglobinated area seen with Wright's stain (peripheral blood smear). Basophilic stippling is seen in lead poisoning.

Free Erythrocyte Protoporphyrin (zinc protoporphyrin)

This compound, a complex zinc ion, which is increased when iron is unavailable in cases of iron deficiency and lead poisoning.

Nrml: <45 micrograms/dl in women, less in men.

Hematocrit

Hct represents the percentage of the RBC mass to the original blood volume. Nrml: 37-47%.

Hemoglobin

Hgb is the most sensitive measure of detecting anemia. This value depends largely on the amount of RBCs and to a lesser extent, on the amount of hemoglobin in each RBC. Nrml: 12-16 in women, lower in pregnancy.

Hemoglobin electrophoresis

This result represents the types and amounts of hemoglobin present. Nrml composition: Hgb A 97%, HgbA2 <2.5%, and Hgb F <1%.

Hypochromia

An increase in the RBC clear area and decrease in pigmented area associated with a decrease in Hgb synthesis. This assessment would be a part of a result of a peripheral blood smear.

MCH (Mean Corpuscular Hemoglobin)

This value is based on estimates of the weight of Hgb in the avg RBC. Hb level divided by the RBC count. Nrml: 26-34 pg.

MCHC (Mean Corpuscular Hemoglobin Concentration)

MCHC measures the average concentration of Hb in the average RBC. This value doesn't depend on the cell size alone, because it is relative to the amount of hemoglobin. This value is shown as a percentage and calculated by dividing Hb by Hct. Nrml: 31-37%.

MCV (Mean Corpuscular Volume)

MCV measures the ave size of the RBC. Increased MCV will yield a slightly higher Hct. Decreased MCV will yield a lower Hct. Nrml: 80-100 fL.

Appendix I: Herbal Options for Common Discomforts of Pregnancy
Kari Radoff and Cynthia Belew, 2009

Anemia:

- 1) Floradix Iron and Herbs
- 2) Nettle leaf infusion
- 3) Yellow dock tincture 2 droppersful BID

Iron-Up Tonic

- ½ cup Yellow Dock root
- ¼ cup Alfalfa leaf
- ¼ cup Nettles leaf
- Organic Black Strap Molasses

Simmer all of the herbs for ½ an hour in 1 pint of water. Strain out the herbs and return the tea back to the saucepan. Bring to a boil once again and reduce the decoction to a total of 8oz. Add 8oz iron rich Molasses to the tea to create a syrup. Mix and pour into a glass jar. Dosage is 2 Tablespoons 1-2xdaily. Store in the refrigerator for up to 6 weeks.

(Kari's recipe)

Constipation

Dried plums, eat 5-6 a day

Prune juice

Yellow dock tincture or Yellow dock and Dandelion root syrup (also high in Fe, traditional remedy for constipation and anemia)

Laxative syrup

- ½ ounce dried Dandelion root
- ½ ounce dried Yellow Dock Root

Simmer both herbs in 4 cups of water, gently, uncovered, until reduced to one cup. Strain the liquid and discard the herb material. Add ½ cup blackstrap molasses, mixing well until blended. Cool to room temperature. Keep refrigerated. It will keep for up to two weeks in the refrigerator. Take 1-2 Tablespoons, up to twice daily

Depression / risk of postpartum depression

1. Saint John's Wort tincture 1-2 droppersful, diluted 2-3 times daily
2. Fish oil, bare minimum of 1000 mg/day, 2000-3000 mg better.

Edema

1. Infusion of dandelion leaf as a gentle diuretic to offload extra fluid
2. Nettle infusion is also diuretic
3. Cleavers tincture 60-90 drops 3xdaily to promote lymphatic drainage and reduce third spacing
4. Massage with diluted stimulating essential oils such as peppermint, orange, or rosemary

Gastritis

1. Meadowsweet and Marshmallow root infusion
2. Strong Chamomile tea

Gas/bloating

1. Strong tea of chamomile (manzanilla) and/or Linden (Tila), Fennel seed
2. Tincture of above 1-2 droppersful, diluted TID

Heartburn

1. Slippery Elm:
 - a. lozenges, 2-4 at a time, up to 12 per day
 - b. powder, 1-2 teaspoons stirred in with oatmeal or applesauce
2. Slowly chew raw almonds. 8-10 at a time
3. Marshmallow root infusion or syrups
4. Marshmallow root and Meadowsweet infusion
5. If they are prone to heartburn when not pregnant use 5-10 drops of bitters 5 minutes prior to large meals to promote adequate breakdown and absorption of food as well as have secretion of digestive acids while food is in the stomach ready to be broken down

Hemorrhoids

1. Treat constipation with above recommendations
2. Witch hazel topical astringent or sitz bath with Witch Hazel, Calendula, Yarrow
3. Topical application (compress) of a black tea teabag (astringent) or a chamomile tea teabag (anti-inflammatory): teabag soaked in hot water for a minute or so, cooled and applied. (careful- black tea will stain fabric)
4. Horse Chestnut seed tincture – 30 drops, diluted, TID - lot of research – equal to compression stockings in efficacy.
5. Nettle leaf infusion – venotonic actions.
6. Food sources of rutin: apricots, cherries, grapes, grapefruit, plums and oranges
 - a. Or Rutin supplements 300 mg TID, effective in RCTs. Safety after 28 weeks has been confirmed in two human trials.

Insomnia

1. Skullcap, Passionflower and/or Valerian tinctures or tea
 - a. Tincture 1-2 droppersful of each TID or PRN, or combined herbs 2-3 droppersful TID or PRN
2. Mandarin essential oil placed on the bottoms of the feet
3. Eat a high protein whey shake prior to bed (to reduce N/V and prevent waking due to dips in blood sugar)
4. Strong chamomile tea
5. Strong Lemon Balm tea
6. Inhalation of lavender essential oil

Leg Cramps

1. Nutritive rich herbal tea (nettles, raspberry, oatstraw, etc.)
2. Magnesium supplement 1000mg/day

Nausea/Vomiting

Can use any of the following remedies alone or in combination with each other.

1. Ginger:
 - a. tea sipped throughout day, alone or mixed with peppermint tea
 - b. ginger candies,
 - c. ginger tincture 10-15 drops, diluted, PRN
 - d. ginger capsules 250-500 mg TID

- e. Reed's Ginger Ale (must be Reeds, most ginger ale does not contain real ginger)
2. Peppermint tea in small sips throughout the day
3. Dandelion root tincture 10-15 drops 3xdaily along with pregnancy tea and B6 (10-25 mg TID-QID)
4. Raspberry, nettles, nutritive tea (Pregnancy tea)
5. Peppermint essential oil (saturate a small piece of cotton with it and put in a small vial to carry, open and sniff as needed – do not use essential oil internally)
6. Tinctures or tea of Anise or Fennel, Chamomile, Meadowsweet, Ginger, Black Horehound (mix all and take 10 drops prn, as frequently as needed-formula from Mary Bove)

Sciatica

1. St. Johns Wort oil topically BID or PRN
2. Malic Acid/Magnesium supplement (we used a supplement that was 600mg Malic Acid w/ 150mg Mg in 2 tablets...take 4-6 tablets/day)

Varicosities: see Hemorrhoids

PUPPS

Topical:

- Chamomile topical cream (patch test first to check for contact dermatitis)
- Saint John's Wort oil, topically
- Aloe Vera gel, topically
- Witch hazel extract, applied as a compress
- Baking soda paste

Internal: Nettle leaf infusion may have skin anti-inflammatory properties

Upper Respiratory Infection

Echinacea tea or tincture

Minimum effective dose 2 droppersful BID, better dose is 2 droppersful 4-5x daily for a few days, to reduce duration and severity of cold symptoms

Ginger, Garlic

Breastfeeding:

Galactagogue

1. Fennel & Fenugreek, I would use this mostly in tea...increase the daily fluid intake and stimulate breastmilk production
2. or fenugreek capsules (Cyntia) TID
3. HerbPharm's Mothers Lactation Tonic

Appendix J: BMI Chart

BODY MASS INDEX (BMI) CHART FOR ADULTS

Obese (>30) Overweight (25-30) Normal (18.5-25) Underweight (<18.5)

HEIGHT (IN.)

	HEIGHT (IN.)																					
	4'8"	4'9"	4'10"	4'11"	5'0"	5'1"	5'2"	5'3"	5'4"	5'5"	5'6"	5'7"	5'8"	5'9"	5'10"	5'11"	6'0"	6'1"	6'2"	6'3"	6'4"	6'5"
260	58	56	54	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	32	31
255	57	55	53	51	50	48	47	45	44	42	41	40	39	38	37	36	35	34	33	32	31	30
250	56	54	52	50	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	30
245	55	53	51	49	48	46	45	43	42	41	40	38	37	36	35	34	33	32	31	31	30	29
240	54	52	50	48	47	45	44	43	41	40	39	38	36	35	34	33	33	32	31	30	29	28
235	53	51	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32	31	30	29	29	28
230	52	50	48	46	45	43	42	41	39	38	37	36	35	34	33	32	31	30	30	29	28	27
225	50	49	47	45	44	43	41	40	39	37	36	35	34	33	32	31	31	30	29	28	27	27
220	49	48	46	44	43	42	40	39	38	37	36	34	33	32	32	31	30	29	28	27	27	26
215	48	47	45	43	42	41	39	38	37	36	35	34	33	32	31	30	29	28	28	27	26	25
210	47	45	44	42	41	40	38	37	36	35	34	33	32	31	30	29	28	28	27	26	26	25
205	46	44	43	41	40	39	37	36	35	34	33	32	31	30	29	29	28	27	26	26	25	24
200	45	43	42	40	39	38	37	35	34	33	32	31	30	30	29	28	27	26	26	25	24	24
195	44	42	41	39	38	37	36	35	33	32	31	31	30	29	28	27	26	26	25	24	24	23
190	43	41	40	38	37	36	35	34	33	32	31	30	29	28	27	26	26	25	24	24	23	23
185	41	40	39	37	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	23	22
180	40	39	38	36	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21
175	39	38	37	35	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21
170	38	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20
165	37	36	34	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	20
160	36	35	33	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	21	20	19	19
155	35	34	32	31	30	29	28	27	27	26	25	24	24	23	22	22	21	20	20	19	19	18
150	34	32	31	30	29	28	27	27	26	25	24	23	23	22	22	21	20	20	19	19	18	18
145	33	31	30	29	28	27	27	26	25	24	23	23	22	21	21	20	20	19	19	18	18	17
140	31	30	29	28	27	26	26	25	24	23	23	22	21	21	20	20	19	18	18	17	17	17
135	30	29	28	27	26	26	25	24	23	22	22	21	21	20	19	19	18	18	17	17	16	16
130	29	28	27	26	25	25	24	23	22	22	21	20	20	19	19	18	18	17	17	16	16	15
125	28	27	26	25	24	24	23	22	21	21	20	20	19	18	18	17	17	16	16	16	15	15
120	27	26	25	24	23	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14
115	26	25	24	23	22	22	21	20	20	19	19	18	17	17	16	16	16	15	15	14	14	14
110	25	24	23	22	21	21	20	19	19	18	18	17	17	16	16	15	15	15	14	14	13	13
105	24	23	22	21	21	20	19	19	18	17	17	16	16	16	15	15	14	14	13	13	13	12
100	22	22	21	20	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	12	12	12
95	21	21	20	19	19	18	17	17	16	16	15	15	14	14	14	13	13	13	12	12	12	11
90	20	19	19	18	18	17	16	16	15	15	15	14	14	13	13	13	12	12	12	11	11	11
85	19	18	18	17	17	16	16	15	15	14	14	13	13	13	12	12	12	11	11	11	10	10
80	18	17	17	16	16	15	15	14	14	13	13	13	12	12	11	11	11	11	10	10	10	9