UNC SCHOOL OF MEDICINE

UNC Center for Maternal & Infant Health

Hypothyroidism

Hypothyroidism

Verbally screen all women for risk factors for or history of thyroid disorders
Indications for thyroid function evaluation in pregnancy[1,4,8,9]
- Personal or family history of thyroid disease
- New onset symptoms: cold intolerance, fatigue, weight gain, goiter
- Type I DM, autoimmune disease, BMI > 40 kg/m^2
- Age > 30
- Residence in area of known mod or severe iodine deficiency
- Infertility
- Thyroid peroxidase antibody (TPOAb) positivity

History of Graves disease with ^{131}I ablation or previous neonatal thryotoxicosis[3]
→ See hyperthyroidism algorithm

Prior diagnosis of hypothyroidism/on replacement therapy
- Yes → Obtain TSH, fT4 at 6-8 weeks EGA[2]; consider increase thyroid replacement 20-30% at positive pregnancy test[2,6,8] → Repeat TSH, +/-free T4 in 4 weeks
- No → TSH, freeT4[8,9] **

TSH, freeT4[8,9] **:
- Elevated TSH low free T4 or TSH > 10 mIU/L[8,9] **Overt hypothyroidism** → Begin levothyroxine 0.1-0.15 mg/day[8,9] → Repeat TSH, +/-free T4 in 4 weeks
- Elevated TSH normal free T4 **Subclinical hypothroidism** → Begin levothyroxine 0.05 mg/day[8] **or** No treatment, consider repeat TSH, free T4 in 4-6 weeks[7,8] **or** obtain TOAb and treat as OH if positive[8] → Repeat TSH, +/-free T4 in 4 weeks
- Normal TSH, free T4 < 10th % tile **Isolated hypothyroxinemia** → Currently no treatment in pregnancy recommended;[8] consider repeat TSH, free T4 in 6 weeks → TSH, freeT4
- Elevated TSH, high free T4 **Hyperthyroidism** → See hyperthyroidism algorithm
- Normal TSH, Normal free T4 **Euthyroid** → PRN follow up

Repeat TSH, +/-free T4 in 4 weeks
Results based on trimester specific TSH reference ranges
In pregnancy, TSH q 4 weeks until 20 weeks, then at least once between 26-32 weeks[8]
- TSH not changed or elevated → If compliant, increase levothyroxine 0.05 mg/day; If dose > 0.25 mg/ day, check free T4 and consult MFM or Endocrine[5] → Repeat TSH
- Low TSH → Decrease levothyroxine dose by 50%[5] → Repeat TSH
- Normal or substantially improved TSH → Continue current dose of levothyroxine → Delivery
  - No → Repeat TSH
  - Yes → After delivery: If on therapy prior to pregnancy – reduce levothyroxine dose to prepregnancy level[6,8]. If not on therapy prior to pregnancy, decrease last dose by 25- 50%. Check TSH at 6 - 8 weeks postpartum[6,8]

**** Normal TSH in pregnancy**[8]
1st trimester: 0.1-2.5 mIU/L
2nd trimester: 0.2- 3.0 mIU/L
3rd trimester: 0.3-3.0 mIU/L
Tx goal – TSH in reference range

Revision 12.9.11

References

1. Mestman JH. Diagnosis and management of maternal and fetal thyroid disorders. **Curr Opin Obstet Gynecol 1999;11:167-75.** *Indications for thyroid testing in pregnancy.*

2. Mandel SL, Larsen PR, Seely EW, Brent GA. Increased need for thyroxine during pregnancy in women with primary hypothyroidism. **N Engl J Med 1990; 323:91 -6.** *For patients with a history of thyroid disease, a free T4 measurement is indicated in addition to the TSH. Mild elevations of TSH are frequently found in hypothyroid women on replacement therapy after conception because of the increased demand for thyroid hormones in pregnancy.*

3. 3) Kilpatrick S. Umbilical blood sampling in women with thyroid disease in pregnancy: Is it necessary? **Am J Obstet Gynecol 2003;189:1-2**. *TSAb should be done on women with history of treatment with 131I or with a previously affected neonate. PUBS should be offered to pregnant women with Graves' disease if any one of the following are present: a) a history of a prior affected baby, b) a history of maternal 131I treatment and a high TSAb level (>5IU or >160%), c) the fetus displays fetal tachycardia, growth restriction, fetal goiter, hydrops or cardiomegaly.*

4. Mestman JH. Endocrine Diseases in Pregnancy. **Obstetrics: Normal and Problem Pregnancies. 4th ed Churchill Livingstone: Philadelphia: 2002**. *Symptoms include tiredness, cold intolerance, fatigue, muscle cramps, constipation and deepening of the voice. Most pregnant women tolerate an initial dose of 0.15mg/day of thyroxine. The maintenance dose required by most patients is between 0.125 and 0.25mg daily.*

5. Wiersinga WM. Thyroid hormone replacement therapy**. Horm Res 2001;56:74-81.** *If the patient is overtreated, it is reasonable to start with a decrease in the replacement dose by half. An accurate prediction of the finally required levothyroxine dose can be obtained by the equation: Levothyroxine (daily dose in µg) = -14 + (4.1 x TSH mU/l)*

6. Seely BL, Burrow GN. Thyroid Disease and Pregnancy**. Maternal Fetal Medicine 4th ed. WB Saunders Co. Philadelphia:1999, 1009.** *Women with thyroid disease prior to pregnancy commonly require increases in their dosage as the pregnancy progresses. Checking TSH each trimester is recommended to monitor dosage adjustments. After delivery, restart the initial dose prior to pregnancy.*

7. Subclinical hypothyroidism in pregnancy. ACOG Committee Opinion. No. 381. American College of Obstetricians and Gynecologists. **Obstet Gynecol 2007; 110:959-60**. **Reaffirmed 2010.** *Thyroid testing in pregnancy should be performed on symptomatic women and those with a personal history of thyroid disease or medical conditions associated with thyroid disease. Routine screening and treatment for subclinical hypothyroidism is currently not recommended and there is no prospective, controlled evidence that treatment improves maternal or infant outcomes.*

8. Stagnaro-Green A, Abalovich M, Alexander E, et al. Guidelines of the American Thyroid Association for the Diagnosis and Management of Thyroid Disease During Pregnancy and Postpartum. **Thyroid 2011;21:1061-1124**. *Definitions of thyroid disorders in pregnancy include: overt hypothyroidism – OH- (TSH > 2.5 mIU/L and decreased free T4 or TSH > 10 mIU/L; subclinical hypothyroidism- SCH - (TSH between 2.5 and 10 mIU/L with normal free T4; isolated hypothyroxinemia- IH- (normal TSH with free T4 < 10th % tile of reference range). Gestational age specific ranges for TSH should be used for diagnosis and management of adequacy of replacement therapy. Optimal assessment of thyroid status in pregnancy is free T4 by liquid chromatography/tandem mass spec with TSH being a more accurate measure of thyroid function than other methods of free T4 assessment in pregnancy. OH should be treated in pregnancy; IH should not be treated in pregnancy; there is insufficient evidence to treat SCH in TAb negative women in pregnancy, with possible benefit to treat SCH in women during pregnancy who are TPOAb positive. Then optimal treatment for maternal hypothyroidism in pregnancy is oral LT4 and it is recommend against using preparations such as T3 or dessicated thyroid – goal of therapy is to normalize TSH in the gestational age specific normal range. Repeat TSH q 4 weeks through 20-24 weeks then at last once between 26 and 32 weeks.*

9. Thyroid disease in pregnancy. ACOG Practice Bulletin No. 37. American College of Obstetricians and Gynecologists. **Obstet Gynecol. 2002;100:387-396**. Reaffirmed 2010. *TSH and free T4 are the TFT's that should be used for diagnosis and management of thyroid disease in pregnancy. Testing for thyroid disease in pregnancy should be done in the presence of symptoms consistent with thyroid disease or personal history of thyroid disease. At this time, routine screening of asymptomatic pregnant women for hypothyroidism is not recommended. Isolated thyroid nodules should be investigated in pregnancy.*

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Notification to Users

These algorithms are designed to assist the primary care provider in the clinical management of a variety of problems that occur during pregnancy. They should not be interpreted as a standard of care, but instead represent guidelines for management. Variation in practices should take into account such factors as characteristics of the individual patient, health resources, and regional experience with diagnostic and therapeutic modalities.

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