Thyroid and pregnancy

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The second most common endocrine disorder affecting women of reproductive age

Contents:

- Overview of thyroid physiology in pregnancy
- Iodine supplement in pregnancy
- Thyroid disease screening & prenatal care
- Hypothyroidism & pregnancy

THYROID FUNCTION IN THE FETUS

- During the 10th to 12th week of gestation, fetal TSH appears, and the fetal thyroid is capable of concentrating iodine and synthesizing iodothyronines. However, little hormone synthesis occurs until the 18th to 20th week. Thereafter, fetal thyroid secretion increases gradually.

- Maternal thyroid hormones are critical for growth and development in the first trimester, when the fetus has no functional thyroid of its own

Iodine deficiency is the leading cause of preventable intellectual deficits worldwide

Mild to Moderate

Iodine Deficiency :

(50–150 µg/L) (UICs)

- ↓ Placental weight
- ↓ Neonatal head circumference
- ADHD
- Impaired cognitive outcomes

Severe

Iodine deficiency :

- ↑ Rates of pregnancy loss,
- Stillbirth
- ↑ Perinatal and infant mortality
- Cretinism
- Profound intellectual impairment
- Deaf
- Mutism
- Motor rigidity

26 years old woman and comes to see you for a preconception appointment. She asks about prenatal supplements

What is the recommended daily iodine intake in women planning pregnancy & women who are pregnant?

- In most regions, women who are planning pregnancy or currently pregnant, should supplement their diet with a daily oral supplement that contains **150 µg** of iodine in the form of potassium iodide.

دستور العمل کشوری استفاده از مکمل یدوفولیک در بارداری و شیردهی

1395/04/14

- کلیه زنانی که قصد بارداری دارند از ۳ ماه قبل از بارداری و یا به محض اطلاع از بارداری روزانه یک عدد مکمل یدوفولیک که حاوی ۱۵۰ میکروگرم ید و ۵۰۰ میکروگرم اسید فولیک می باشد تا پایان ماه چهارم بارداری داده شود.
- از پایان ماه چهارم بارداری تا ۳ ماه پس از زایمان مکمل مولتی ویتامین حاوی ۱۵۰ میکروگرم ید به کلیه مادران باردار باید داده شود.
- بدیهی است از پایان ماه چهارم که مکمل مولتی ویتامین مینرال حاوی ۱۵۰ میکروگرم ید مصرف می شود مکمل یدو فولیک نباید استفاده شود.

She asks you whether to screen her, preconception, for thyroid problems

Screening for thyroid disorders in pregnancy

The following patient should be screened for thyroid disease using TSH and FT4 preferably during prior to conception

- Type 1 and Type 2 diabetes, Gestational Diabetes
- Other autoimmune disorders (eg ceoliac disease etc)
- Previous history of thyroid disease
- Current thyroid disease
- Family history of thyroid disease (1st degree relative)
- Goiter or other features of thyroid disease

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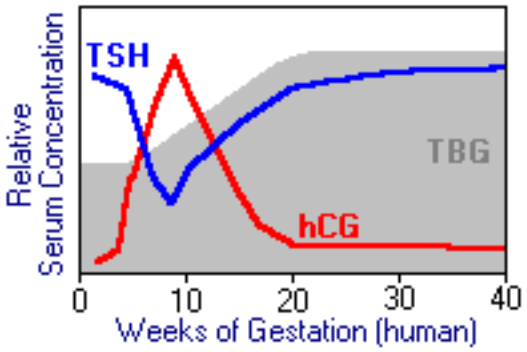
جدول مراقبت پیش از بارداری و بارداری

زمان مراقبت / نوع مراقبت	پیش از بارداری
مصاحبه و تشکیل پرونده یا بررسی پرونده	– مشخصات و شرح حال، نسبت خویشاوندی با همسر – سابقه بارداری و زایمان قبلی و قاعدگی – بیماری و ناهنجاری/ اختلالات ژنتیکی – اختلالات روانی/ همسرآزاری – رفتارهای پر خطر – اعتیاد، مصرف سیگار، الکل – مصرف یا حساسیت دارویی – رژیم غذایی خاص
معاینه بالینی	– اندازه گیری قد و وزن – تعیین شاخه توده بدنی (BMI) – علائم حیاتی، معاینه فیزیکی (قلب، تیروئید، ریه، پستان و...)/ معاینه دهان و دندان – معاینه واژن و لگن
آزمایشها یا بررسی های تکمیلی	★ CBC, BG, Rh, FBS, U/A, U/C, HBsAg ,TSH، پاپ اسمیر، تیتر آنتی بادی ضد سرخجه و واریسلا (در صورت نیاز) ، HIV و VDRL (در رفتارهای پرخطر)



Hypothalamus

Thyroid-releasing hormone

Anterior pituitary

Thyroid-stimulating hormone (TSH)

Thyroid

Production of T_3 and T_4

Human chorionic gonadotropin (hCG) cross-reacts and stimulates TSH receptor

Placenta

Degradation of T_3 and T_4 by **deiodinase type 3**

Liver

⇧**Estrogen production**

⇧hepatic synthesis of thyroid binding globulin and prolonged half-life

⇧TBG

Rise in total t_3 and total t_4

Negative feedback

Changes in TFT in normal pregnant woman

condition	TSH	F-T4	Total T4
Normal pregnant	↓	No change	↑

When Possible

population-based trimester-specific reference ranges for serum TSH should be defined through assessment of local population data representative of a health care provider's practice

Table 2. TSH reference ranges in pregnancy

Screening at any moment during pregnancy	TSH reference ranges (mIU/L) and upper limit	
	American Endocrine Society	American Thyroid Association and European Thyroid Association
First trimester	0.1~2.5	<2.5
Second trimester	0.2~3.0	<3.0
Third trimester	0.3~3.0	<3.5

Maternal Hypothyroidism

TSH >upper limit of the pregnancy-specific reference range.

Condition	Preconception	Pregnancy	Postpartum
Overt hypothyroidism	•↓Fertility •↑Miscarriage	• Anemia • Neurocognitive deficit • Gestational HTN • LBW • Preeclampsia • Placental abruption • Prematurity	• Maternal thyroid dysfunction • Hemorrhage
subclinical hypothyroidism	Similar to hypothyroidism but less documentation exist		

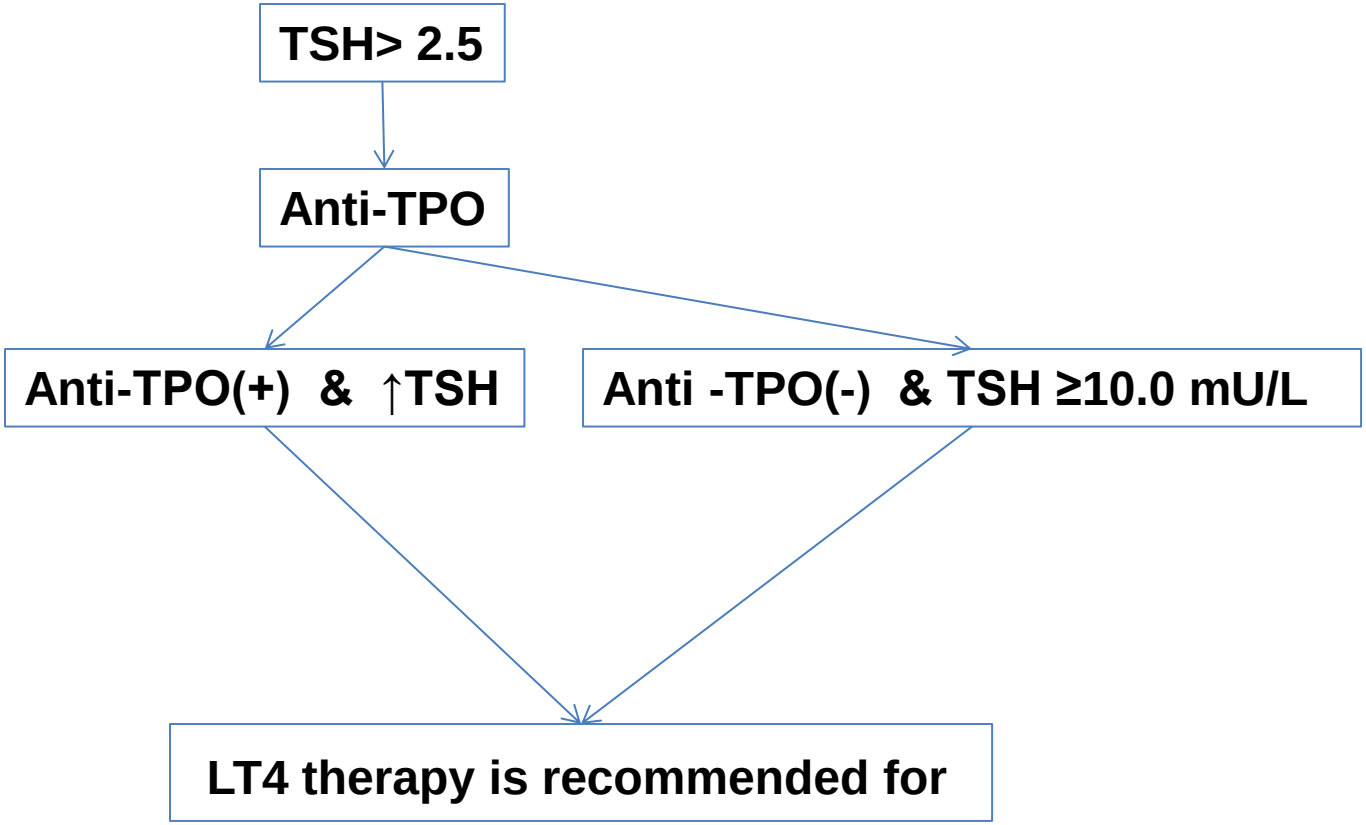
Changes in TFT in Hypothyroidism

Condition	TSH	F-T4	Total T4
Hypothyroidism	↑	↓	↓

Treatment of hypothyroidism in pregnancy

Treatment	Treatment goal	Monitoring
Levothyroxine 100 -150 mcg/day	TSH < 2.5	Serum TSH at 4-6 w ↓ Every 4-6w ↓ Until 20th w (stable medication dosage) ↓ 24th-28th w ↓ 32th – 34th w

Should women with subclinical hypothyroidism be treated in pregnancy?



How should women with hypothyroidism or at risk for hypothyroidism be monitored through pregnancy?

Women with :

- **overt hypothyroidism**
- **subclinical hypothyroidism** (treated or untreated)
- **those at risk for hypothyroidism**
  - * Euthyroid / TPOAb(+)
  - * Euthyroid / TgAb (+)
  - * Post-hemithyroidectomy
  - * Treated with radioactive iodine

TSH

Every 4 weeks until mid-gestation

At least once **near 30 weeks gestati**

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What proportion of treated hypothyroid women (receiving LT4 prenatally) require changes in their LT4 dose during pregnancy?

Hypothyroid women treated with LT4 who are planning pregnancy, serum TSH should be evaluated preconception, and LT4 dose adjusted to achieve a TSH value between the lower reference limit and 2.5 mU/L.

patients receiving LT4 treatment with a suspected or confirmed pregnancy should independently increase their dose of LT4 by 20%–30% and urgently notify their caregiver

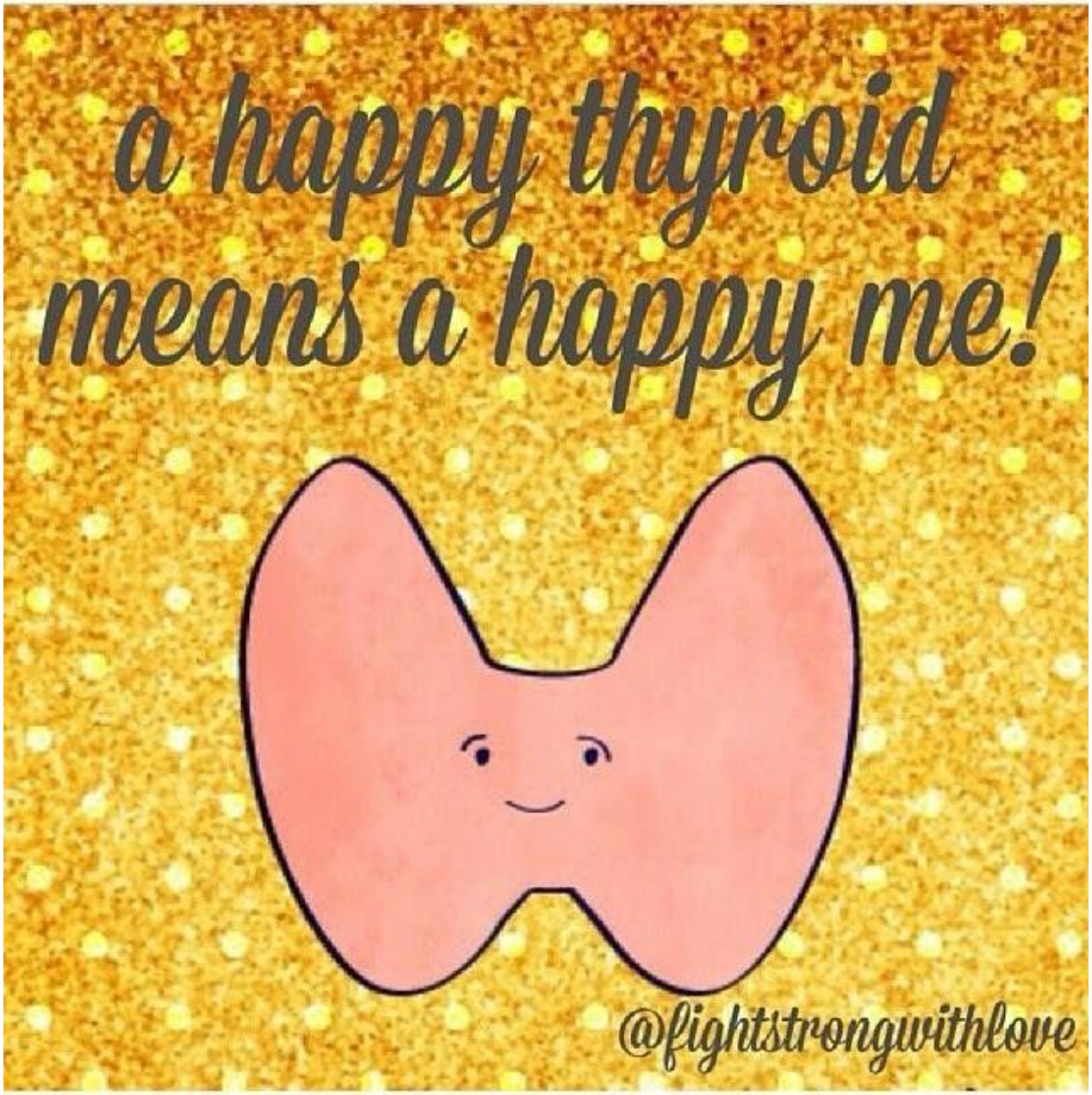
Administer 2 additional tablets weekly of the patient's current daily LT4 dosage.

How should LT4 be adjusted postpartum?

Following delivery, LT4 should be reduced to the patient's preconception dose

Some women in whom LT4 is initiated during pregnancy may not require LT4 post partum. Such women are candidates for discontinuing LT4, especially when the LT dose is 50 lg/d.

If LT4 is discontinued, TSH should be evaluated in approximately 6 weeks.


a happy thyroid
means a happy me!
@fightstrongwithlove