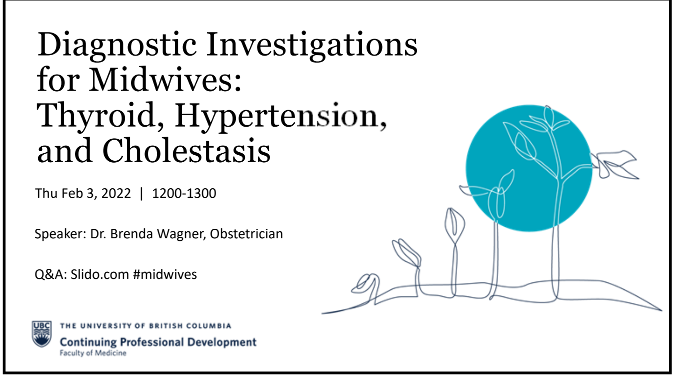

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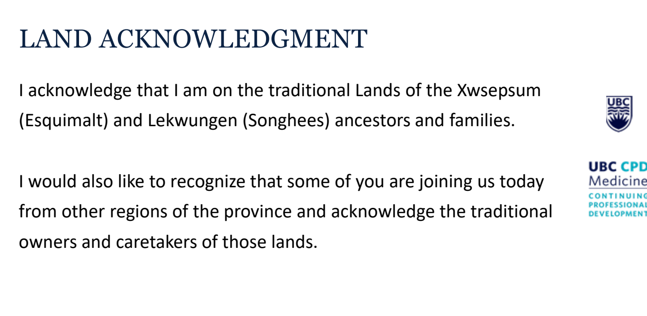

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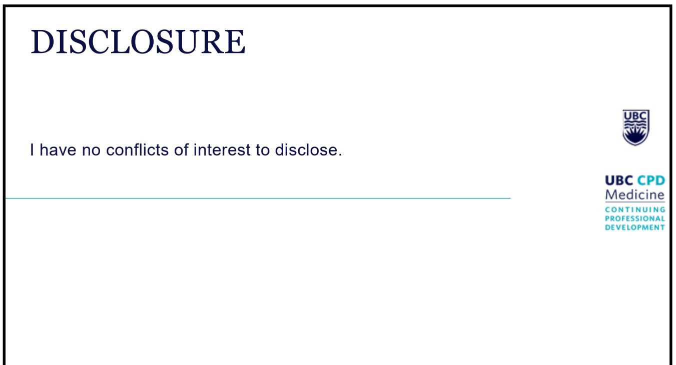

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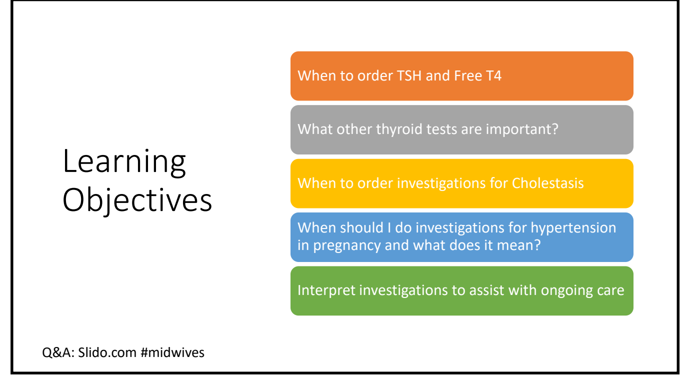

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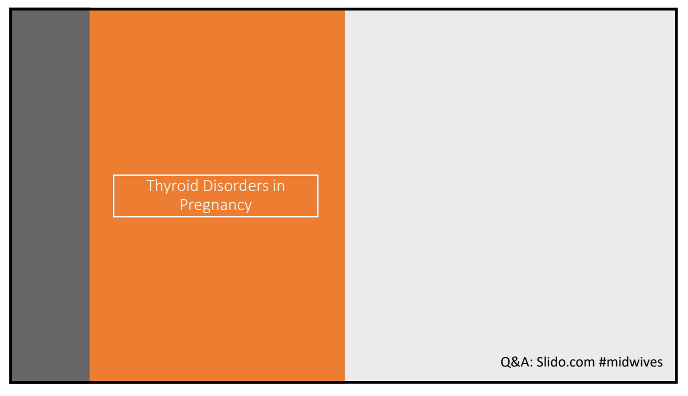

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When to do a TSH in pregnancy- What do you think?

1. Routinely in first trimester.
2. With hypothyroidism and on treatment
3. Experiencing excessive fatigue, feeling cold and constipation should have a TSH.
4. With IDDM or autoimmune disease (e.g. celiac) should have a TSH checked in pregnancy.
5. With hyperemesis.
6. With tachycardia, increased sweating, and diarrhea.

Q&A: Slido.com #midwives

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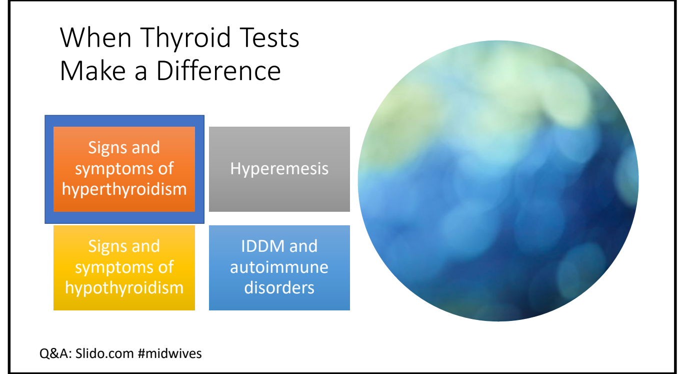

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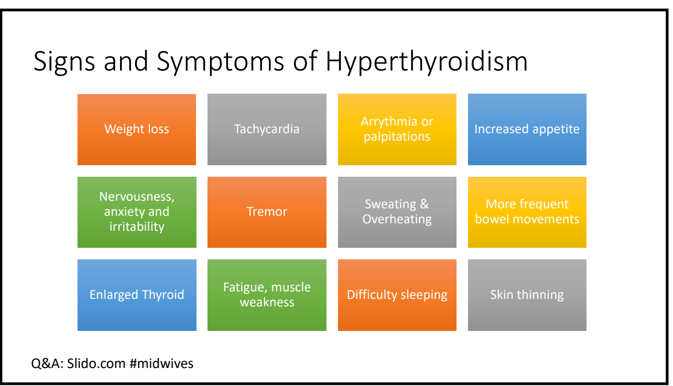

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Why is it important to diagnose and treat hyperthyroidism?

- Inadequately treated maternal hyperthyroidism can result in preterm labour and pre-eclampsia.
- Women with active Graves' disease during pregnancy are at higher risk of developing severe hyperthyroidism and thyroid storm.
- Graves' disease often improves during the third trimester of pregnancy and may worsen during the post partum period.

Q&A: Slido.com #midwives

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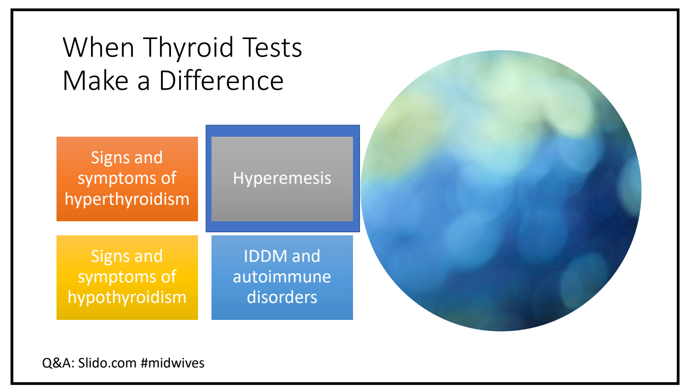

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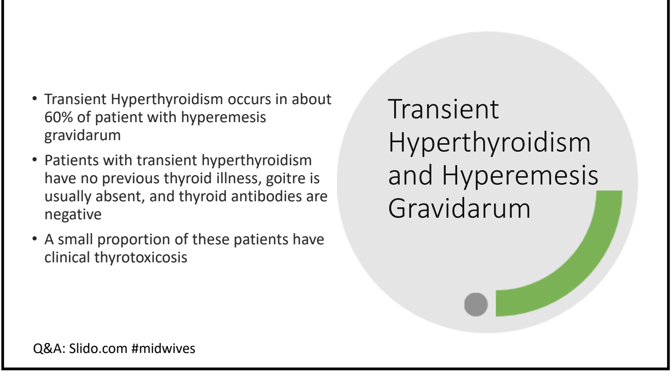

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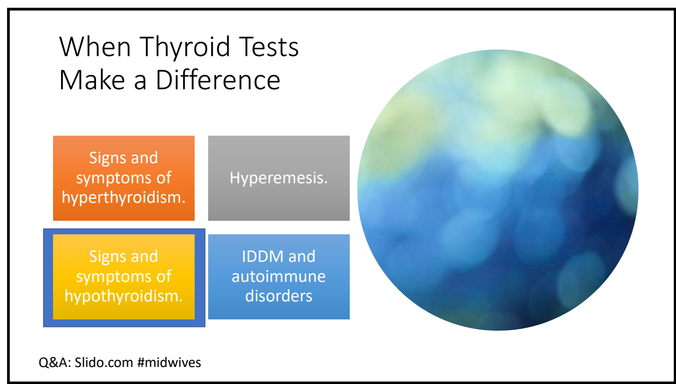

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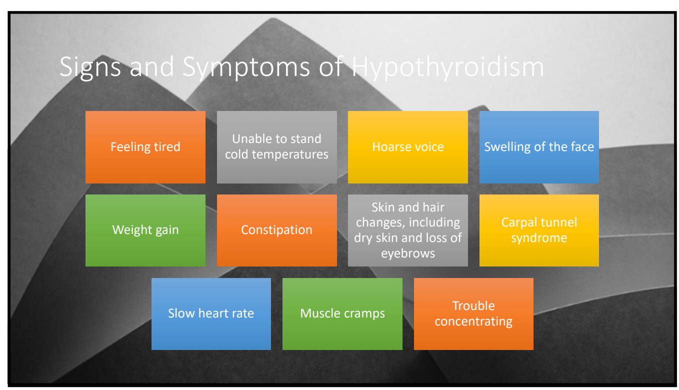

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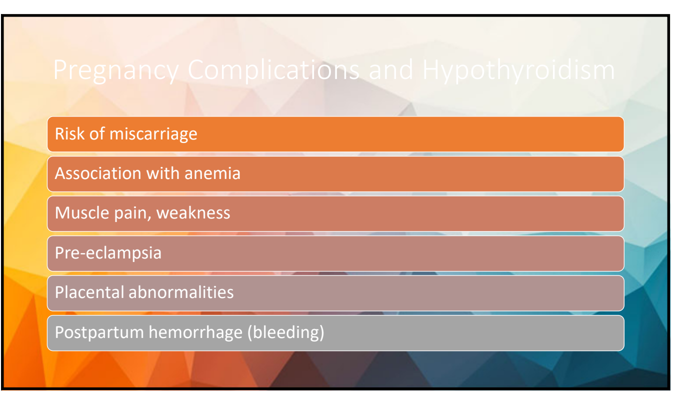

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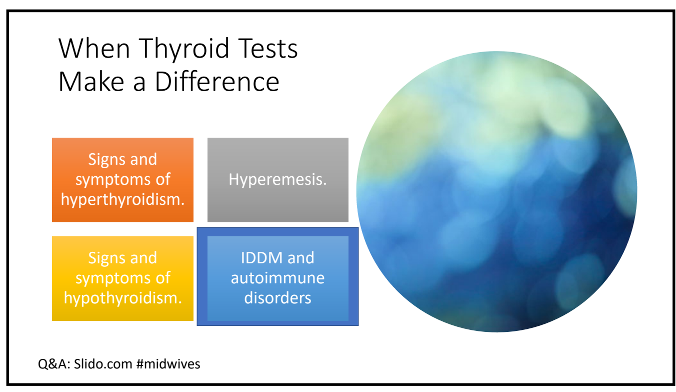

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Other Conditions Associated With Hypothyroidism

- Celiac Disease
- Sjogren's Syndrome
- Pernicious Anemia
- Type 1 or Type 2 Diabetes
- Rheumatoid Arthritis
- Lupus

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For pregnant people already on levothyroxine

Guidelines for Management of Thyroxine from Calgary, Alberta

- Increase levothyroxine by two additional tablets per week once pregnancy is confirmed avoids development of overt hypothyroidism among most women.
  Example: A woman on levothyroxine 100 mcg/day with TSH 3.5 mIU/L prior to conception should take levothyroxine 100mcg/day Monday to Friday and 200mcg/day on Saturday and Sunday or levothyroxine 125 mcg/day once pregnant.
- To avoid iatrogenic hyperthyroidism, if preconception thyroid stimulating hormone (TSH) is known to be <1.2 mU/L, maintain preconception levothyroxine dose.
- Monitor TSH at time of pregnancy confirmation and every 4 weeks less than 20 weeks gestation or until stable TSH is achieved within gestational age specific reference ranges (see table below) then q trimester thereafter.
- Adjust levothyroxine to achieve and maintain TSH within gestational age specific reference ranges.
- Postpartum women should return to their pre-pregnancy levothyroxine dosage and have a TSH checked 6 weeks postpartum to ensure it is normal. Counsel patients to avoid co-ingestion of levothyroxine with iron or calcium supplements.*

*https://www.departmentofmedicine.com/endocrinology/endo-clinics/endo-endocrine-pathways/endo-thyroid-function-pregnancy/

19

When do Thyroid Tests Make a Difference

There is no evidence of benefit to universal TSH screening

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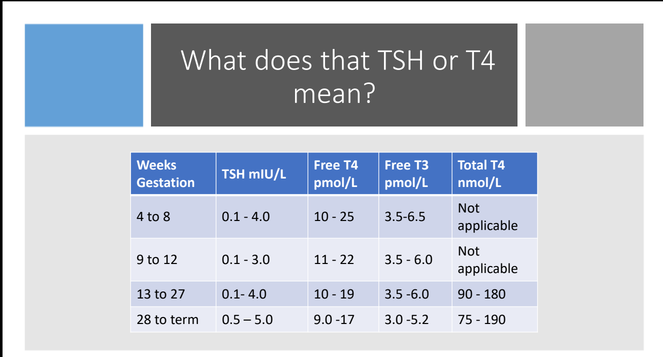

What does that TSH or T4 mean?

Weeks Gestation	TSH mIU/L	Free T4 pmol/L	Free T3 pmol/L	Total T4 nmol/L
4 to 8	0.1 - 4.0	10 - 25	3.5-6.5	Not applicable
9 to 12	0.1 - 3.0	11 - 22	3.5 - 6.0	Not applicable
13 to 27	0.1- 4.0	10 - 19	3.5 -6.0	90 - 180
28 to term	0.5 – 5.0	9.0 -17	3.0 -5.2	75 - 190

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Someone checked a TSH ?Hypothyroid

TSH>10mIU/L

- Start levothyroxine
- Monitor TSH every 4 weeks if < 20 weeks gestation or until TSH steady
- Then TSH q trimester to ensure that it remains normal.
- Postpartum: 20% dosage reduction of levothyroxine and check TSH 6 weeks postpartum

TSH ≥ 5mIU/L and <10mIU/L

- Repeat in 2 weeks:
- If TSH if persistently > 5 mIU/L and <10mIU/L - No evidence of benefit of Levothyroxine
- If decision to start levothyroxine is made use low dose (i.e. 50 mcg/day.)
- If levothyroxine initiated stop postpartum and recheck TSH at 6 to 12 weeks

if TSH ≤ 5 mIU/L – no further intervention or labs tests required

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Someone checked a TSH ?Hyperthyroid

If TSH 0.1 to <5 mIU/L

- No further intervention or lab testing of TSH or antithyroid peroxidase antibodies required (1, 3, 4)

If TSH <0.1 mIU/L

- Check Free T4 and Free T3
- If Free T4 or Free T3 elevated above gestational age specific reference ranges (in table below), Endocrinology or Internal Medicine referral

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Good Websites for Patients

https://www.niddk.nih.gov/health-information/endocrine-diseases/hypothyroidism

https://www.thyroid.org/

https://www.hopkinsmedicine.org/health/conditions-and-diseases/staying-healthy-during-pregnancy/hypothyroidism-and-pregnancy

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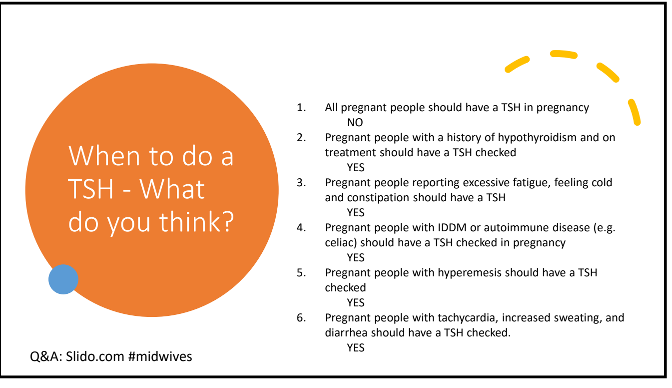

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A word about Thyroid Antibodies

- Thyroid autoimmunity refers to the presence of antibodies to thyroperoxidase or thyroglobulin or thyroid-stimulating hormone receptor antibodies
- Present in 18% of pregnant patients
- Post-partum thyroiditis is substantially more frequent in those who have thyroid antibodies during pregnancy than in those who do not
- Neonatal complications are not as common as previously thought. Measurement of antibodies is mostly for maternal complications.

Balucan FS, Morshed SA, Davies TF. Thyroid autoantibodies in pregnancy: their role, regulation and clinical relevance. *J Thyroid Res*. 2013;2013:182472. doi:10.1155/2013/182472

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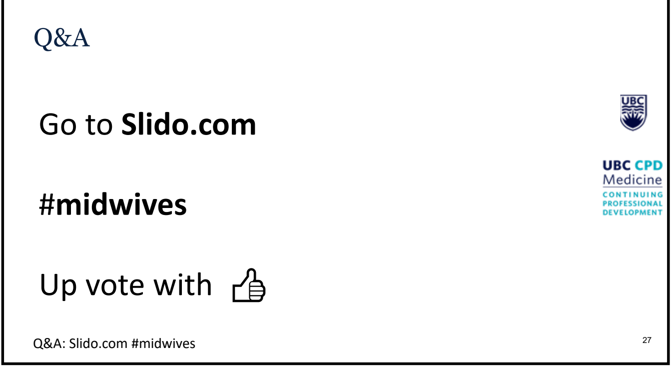

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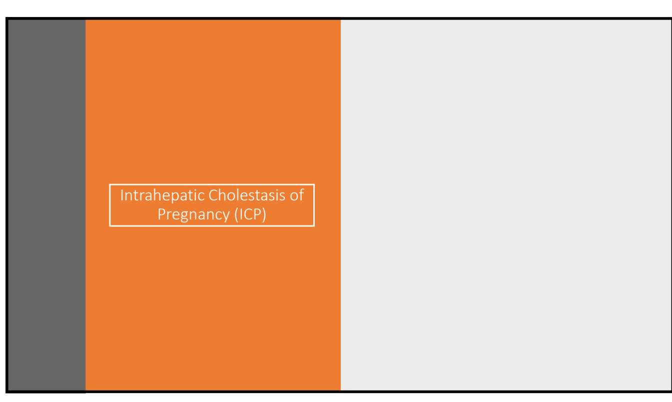

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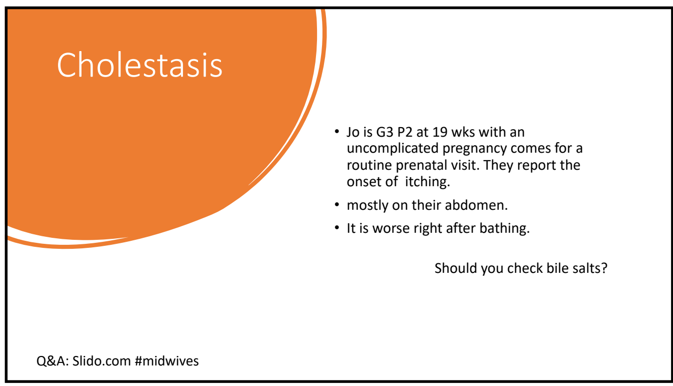

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- Should you check bile salts?

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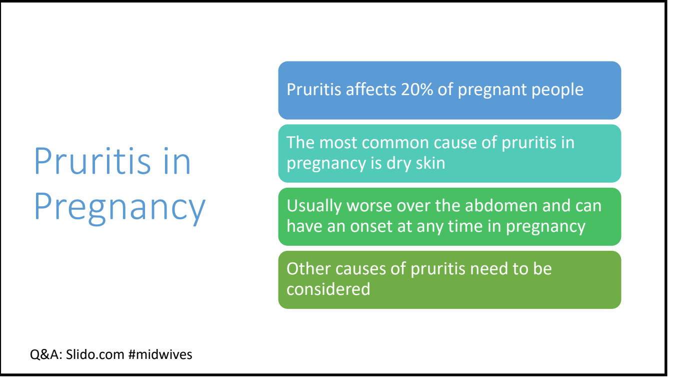

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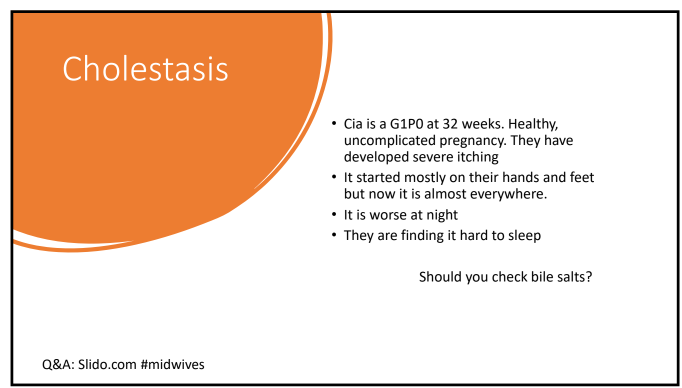

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- Should you check bile salts?

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Cholestasis

- North America Average is 0.5-1%
- More common in winter in Scandinavia and Chile higher (15-28%)
- occurs after 20 weeks gestation
- Pruritis may start on hands and feet and may become so severe it is interfering with sleep
- It does not usually improve with moisturizers or antipruritic remedies
- Usually has no visible skin changes unless excoriations are present.

Q&A: Slido.com #midwives

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Complications of Cholestasis

ICP is associated with several adverse perinatal outcomes

- Stillbirth
- meconium-stained amniotic fluid
- preterm birth -spontaneous and iatrogenic.

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Bile Salts – When to Check and What they mean

- Little difference between fasting & random bile acids
- If pruritis persists, repeat bile acids - but weekly testing not recommended
- Bile Salts > 10 considered diagnostic of ICP (limited data and accuracy unclear)
- To prevent stillbirth recommend early intervention (36+0) if bile salts $\geq$100 µmol
- Cochrane – "The diagnostic accuracy of total serum bile acids for intrahepatic cholestasis of pregnancy might have been overstated"

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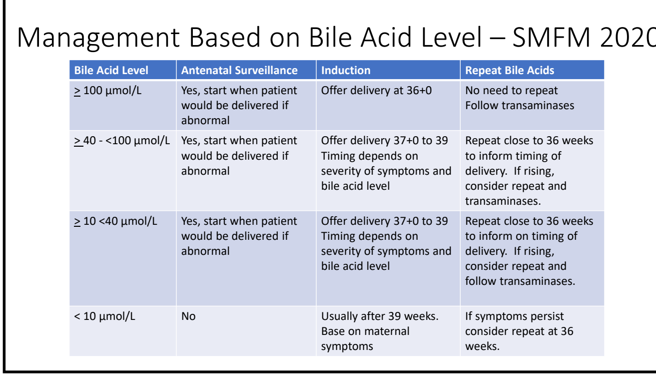

Management Based on Bile Acid Level – SMFM 2020

Bile Acid Level	Antenatal Surveillance	Induction	Repeat Bile Acids
≥ 100 µmol/L	Yes, start when patient would be delivered if abnormal	Offer delivery at 36+0	No need to repeat Follow transaminases
≥ 40 - <100 µmol/L	Yes, start when patient would be delivered if abnormal	Offer delivery 37+0 to 39 Timing depends on severity of symptoms and bile acid level	Repeat close to 36 weeks to inform timing of delivery. If rising, consider repeat and transaminases.
≥ 10 <40 µmol/L	Yes, start when patient would be delivered if abnormal	Offer delivery 37+0 to 39 Timing depends on severity of symptoms and bile acid level	Repeat close to 36 weeks to inform on timing of delivery. If rising, consider repeat and follow transaminases.
< 10 µmol/L	No	Usually after 39 weeks. Base on maternal symptoms	If symptoms persist consider repeat at 36 weeks.

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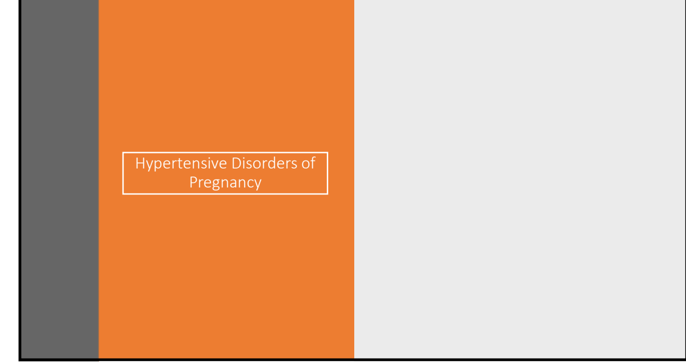

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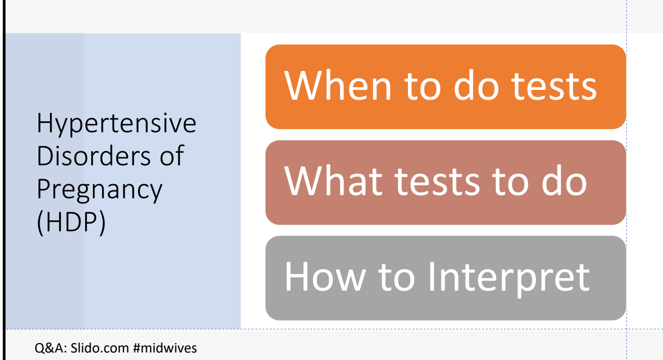

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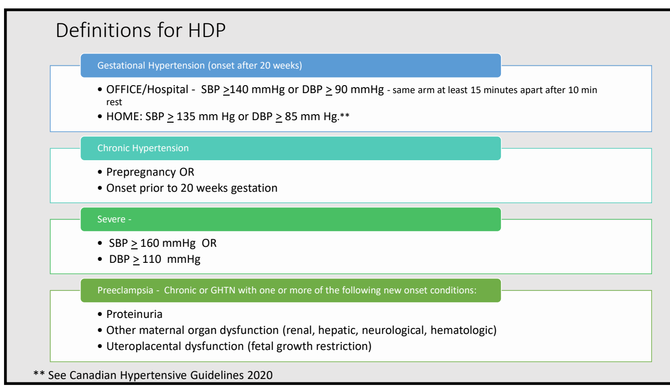

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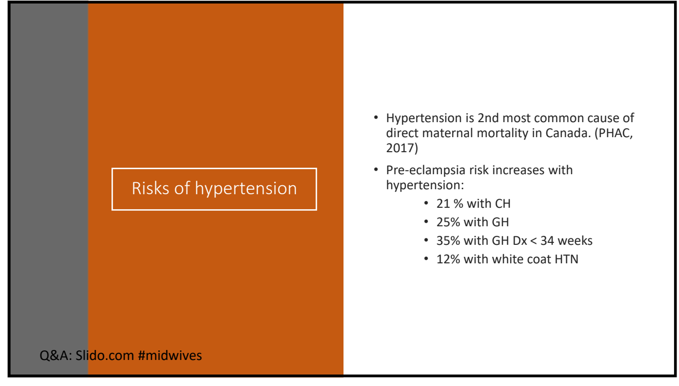

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Should you do Lab Tests?

- A healthy G1 with BP 135/85 mmHg in the office on one occasion
- A healthy G1 with white coat hypertension and BP 135/85 at home on 2 occasions*
- A patient with IDDM and elevated creatinine in early pregnancy
- Anyone in pregnancy with a history of hypertension

See Canadian Hypertensive Guidelines 2020

Q&A: Slido.com #midwives

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When to Do Lab Tests

- Diagnostic Criteria for Gestational Hypertension have been met
- High risk of Gestational Hypertension based on screening
  - e.g. EMMA clinic with moderate or high risk of HDP
- In Pregnancy with Chronic Hypertension, particularly pre-pregnancy Type 1 or Type 2 diabetes or renal disease.
- Rising bp and proteinuria or normal blood pressure and signs or symptoms of preeclampsia – do a Urine PCR and if abnormal do bloodwork.

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Laboratory Investigations

- CBC
- Creatinine, Na, K, Uric Acid
- Liver enzymes – AST* or ALT, LDH
- Urine protein
  - Urine PCR > 30 mg/mmol
  - Only repeat when ≤ 30 mg/mmol
- Others as clinically indicated
  - PTT, INR, Fibrinogen – only when plts abnormal
  - Glucose, bilirubin,
  - Albumin
  - GBS

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Lab Normal Values in Pregnancy

Test	Normal Value	Pregnancy	Test	Normal Value	Pregnancy
Albumin	35-50 g/L	25-40 g/L	**AST**	7-40 IU/L	7-40 IU/L
Creatinine (s)	50-110 µmol/L	30-80 µmol/L	**ALT**	5-35 IU/L	5-35 IU/L
Hemoglobin	120-160 g/L	100-144	**Platelets**	150-400 x 109/L	Sl. Decrease
Hematocrit	0.37-0.47%	30-40%	**Sodium**	135-145 mmol/L	131-143 mmol/L
Uric Acid	120-420 µmol/L	90-300 µmol/L	**Potassium**	3.5-5.1 mmol/L	3.2-4.9 mmol/L
LDH	45-90 IU/L	45-90 IU/L			

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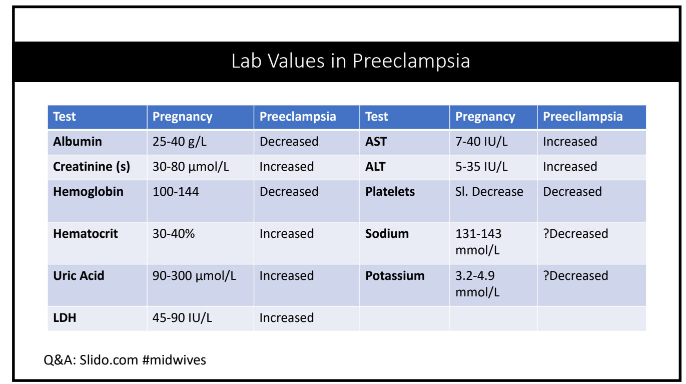

Lab Values in Preeclampsia

Test	Pregnancy	Preeclampsia	Test	Pregnancy	Preecllampsia
Albumin	25-40 g/L	Decreased	**AST**	7-40 IU/L	Increased
Creatinine (s)	30-80 µmol/L	Increased	**ALT**	5-35 IU/L	Increased
Hemoglobin	100-144	Decreased	**Platelets**	Sl. Decrease	Decreased
Hematocrit	30-40%	Increased	**Sodium**	131-143 mmol/L	?Decreased
Uric Acid	90-300 µmol/L	Increased	**Potassium**	3.2-4.9 mmol/L	?Decreased
LDH	45-90 IU/L	Increased			

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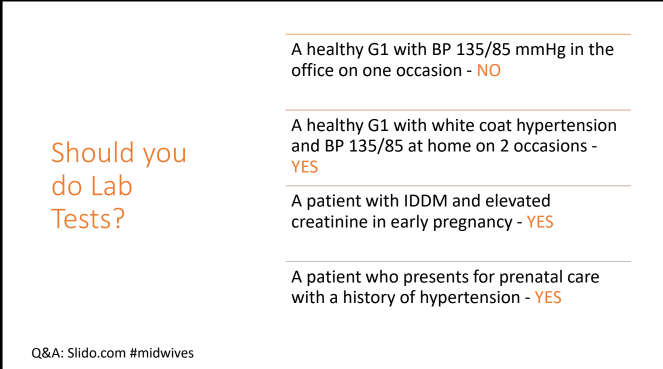

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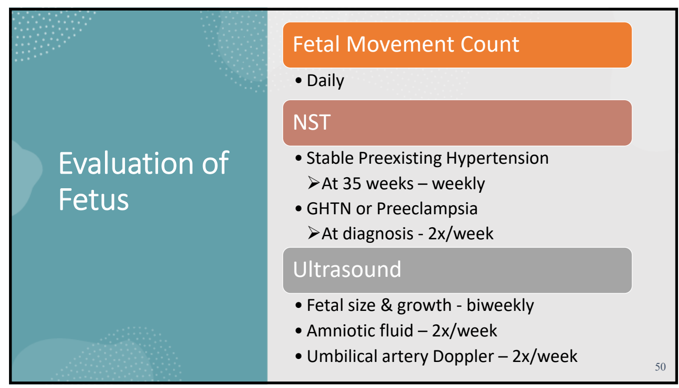

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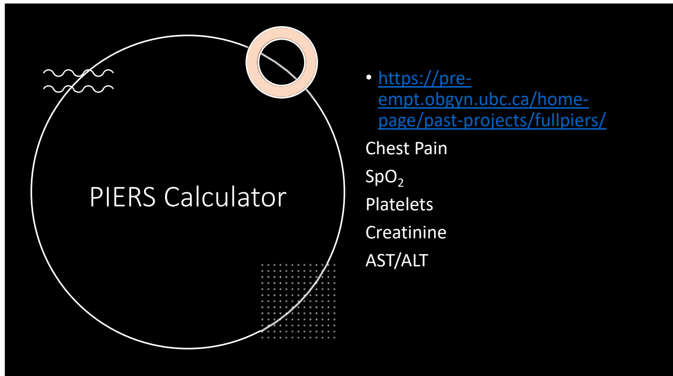

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Evaluating Maternal and fetal Markers of Adverse placental outcomes (EMMA)

Antenatal risk assessment for placentallymediated pregnancy complications

≥1 Major risk factor:
- ❒ Chronic renal disease
- ❒ Anti Phospholipid Antibody Syndrome
- ❒ Chronic hypertension
- ❒ Diabetes with evidence of end organ disease
- ❒ Chronic/Active Autoimmune disease
- ❒ Maternal age ≥40 + nulliparity
- ❒ Previous: (i) severe pre-eclampsia Or (ii) IUGR resulting in delivery <34 weeks
- ❒ Previous unexplained stillbirth
- ❒ First or second trimester heavy menstrual-like bleeding
- ❒ Fetal 2nd trimester echogenic bowel
- ❒ Other: ____________

• 2 abnormal analytes
- ❒ PAPP-A ≤ 0.15 MoM
- ❒ uE3 ≤ 0.40 MoM
- ❒ AFP ≥ 2.5 MoM
- ❒ hCG ≥ 4.0 MoM
- ❒ Inhibin A ≥ 3.0 MoM

And/Or

• 1 severely abnormal analyte
- ❒ AFP ≥ 3.5 MoM
- ❒ hCG ≥ 4.5 MoM
- ❒ Inhibin A ≥ 4.0 MoM

≥3 minor risk factors:
- ❒ Nulliparity
- ❒ Maternal age <20 or >35
- ❒ BMI <20 or >35
- ❒ IVF pregnancy
- ❒ Pre-existing diabetes
- ❒ Pregnancy interval <6 or >60months
- ❒ Any previous pre-eclampsia or IUGR
- ❒ Smoking ≥5 cigarettes per day
- ❒ Single abnormal maternal serum analyte
  - ❒ PAPP-A ≤ 0.15 MoM
  - ❒ uE3 ≤ 0.40 MoM
  - ❒ AFP ≥ 2.5 MoM
  - ❒ hCG ≥ 4.0 MoM
  - ❒ Inhibin A ≥ 3.0 MoM

- ✓ Start ASA 81mg daily ≤ 16 weeks GA
- ✓ Start Calcium 1g/d if daily intake is <600mg/d
- ✓ book detail ultrasound at 19-20 weeks
- ✓ Eligible for BCW EMMA Clinic consultation (attach risk assessment form to MFM referral)

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References and Resources

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- http://www.bcwomens.ca/Pregnancy-Prenatal-Care-Site/Documents/BCW%20EMMA%20Clinic%20referral.pdf
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