Does universal screening and treatment for thyroid dysfunction in pregnancy improve maternal and child outcomes?

**Bottom line**
Although multiple studies have demonstrated that universal screening, compared with case finding, identifies more women with thyroid dysfunction who may be subsequently treated, universal screening has not been shown to improve maternal or neonatal/child outcomes (SOR: B, based on systematic review and 2 RCTs).

**CASE**
You are seeing a 28-year-old in clinic for her initial OB visit at 12 weeks. She has a history of anxiety and is overweight (BMI 29 kg/m²), but has no other medical conditions. As you discuss routine antenatal screening, you consider ordering a thyroid-stimulating hormone (TSH) level.

**Evidence summary**
In a 2010 trial, 4,562 women were randomized to universal thyroid screening versus "case finding," in which only high-risk women had their sera tested.¹ Few women with hyperthyroidism were identified; women with hypothyroidism received levothyroxine.

Although patients in the universal screening group were more likely to be diagnosed and treated (risk ratio [RR] 3.15; 95% CI, 1.91–5.20), no overall differences were noted between groups in a composite of adverse maternal outcomes (RR 0.99; 95% CI, 0.95–1.03). Further analysis found no differences in adverse events including preeclampsia, preterm birth, miscarriage, gestational hypertension, gestational diabetes, cesarean section rate, placental abruption, low birth weight, neonatal intensive care unit admission, or respiratory distress. The authors did note that low-risk women with thyroid abnormalities in the (treated) universal screening group were less likely to experience "at least one adverse outcome" than low-risk women with thyroid abnormalities (untreated) in the case finding group (36/39 vs 19/51; RR 1.8; 95% CI, 1.4–2.5).¹

A 2012 multicenter randomized trial evaluated the effect of antenatal thyroid screening and treatment on cognitive outcomes in offspring at age 3.² A total of 21,845 women were randomized to either no screening or universal thyroid screening (TSH and free T4), with treatment with levothyroxine if levels suggested subclinical or overt hypothyroxinemia. Children were subsequently tested by blinded psychologists at age 3.

No differences were noted in IQ scores at age 3 years (difference 0.8 points; 95% CI, −1.1 to 2.6; \(P=0.40\)) or in percentage of offspring with an IQ of less than 85 (difference, 2.1 percentage points; 95% CI, −2.6 to 6.7). Post hoc analysis revealed no differences in cognitive outcomes based on on-treatment analysis, by levels of TSH and free T4, or differences in measures of child executive function or problem behavior.²

A 2015 meta-analysis of 8 cohort and cross-sectional studies found that targeted screening missed almost 50% of cases of hypothyroid dysfunction in pregnancy.³ However, there was significant heterogeneity in the included studies, not all of which included maternal or neonatal outcomes. Among studies that reported maternal and neonatal outcomes, results were inconsistent.³ Cochrane reviewers, looking at essentially the same data set, concluded that while screening increased the number of women identified and treated for thyroid dysfunction, such screening did not clearly change maternal or neonatal outcomes.⁴

**Recommendations from others**
A 2015 ACOG statement did not recommend universal thyroid screening based on the lack of evidence of benefit in children of women screened and treated for hypothyroidism.⁵ The American Endocrine Society recommended an aggressive case-finding approach to test high-risk women (see **TABLE**).⁶ An American Thyroid Association report held that evidence was insufficient to recommend for or against universal screening, but also recommended screening women at high risk for overt hypothyroidism (see **TABLE**).⁷
In this 28-year-old multigravida, who did not have any of the risk factors above, you do not obtain a screening TSH in early pregnancy. She delivers a healthy term infant at 39 weeks.

Bonnie Garvens, MD
Lee Dresang, MD
University of Wisconsin Department of Family Medicine and Community Health
Madison, WI

References

Glossary
- ARR=absolute risk reduction
- CDC=Centers for Disease Control and Prevention
- CI=confidence interval
- CT=computed tomography
- FDA=US Food and Drug Administration
- HR=hazard ratio
- LOE=level of evidence
- MRI=magnetic resonance imaging
- NNH=number needed to harm
- NNT=number needed to treat
- NSAID=nonsteroidal anti-inflammatory drug
- OR=odds ratio
- RCT=randomized controlled trial
- RR=relative risk
- SOR=strength of recommendation
- SSRI=selective serotonin reuptake inhibitor
- WHO=World Health Organization