HUDSON VALLEY RADIOLOGY ASSOCIATES

Universal Fetal Cardiac Ultrasound-
At the Heart of Newborn Well-Being

September 20, 2013

RE: Preeclampsia screening available at HVRA.

Dear Colleague:

Hudson Valley Radiology Associates with PerkinElmer/NTD Labs now offers First Trimester Preeclampsia Screening (FTPS). FTPS is an evidenced based effective test detecting high risk patients. Early detection and treatment with low dose aspirin is an evidence based strategy reducing maternal and fetal morbidity.

The leading causes of perinatal death are preterm birth, fetal abnormalities and impaired placentation leading to preeclampsia and fetal growth restriction.

FTPS is performed at 11-14 weeks concurrently with first trimester aneuploidy screening.

FTPS detects 91% of early onset preeclampsia at a 5% fixed false-positive rate. Negative predictive value is 99.94%. Early onset preeclampsia is defined as preeclampsia resulting in delivery at less than 34 weeks gestational age. In comparison, screening for preeclampsia by maternal factors *only* at a fixed 5% false-positive rate detects 33% of early preeclampsia.

FTPS involves a maternal venipuncture for biochemical analytes (PAPP-A, pregnancy-associated plasma protein A; PLGF, placental growth factor and AFP) in combination with accredited Uterine Artery Doppler, maternal blood pressure and maternal risk factors. A cutoff value of 1:50 is considered high risk.

Poon (Prenatal Diagnosis 2010) demonstrated significant proportion of early onset preeclampsia, severe preeclampsia, and IUGR can be identified at 11-13 weeks using a combination of Uterine Artery Doppler, maternal mean arterial blood pressure, BMI, ethnicity and serum biochemical markers.

First trimester preeclampsia screening now enables -

- Identification of asymptomatic high-risk patients, particularly those who are nulliparous – 10% of first pregnancies are complicated by preeclampsia.
- Increased surveillance of high-risk patients.
- Intervention options – aspirin treatment, increased monitoring, modified activity, bedrest.

Meta-analysis studies (Roberge. Ultrasound in Obstetrics and Gynecology, 2013. Bujold. Obstetrics and Gynecology 2010) have demonstrated low-dose aspirin treatment of at-risk patients initiated less than 16 weeks to be associated with statistically significant reductions in perinatal deaths, preeclampsia, severe preeclampsia, IUGR, and preterm death.

The prospective determination of whether or not early low-dose aspirin substantially reduces perinatal death remains to be determined.

Demographics of preeclampsia -

- Preeclampia affects 2-5% of all pregnancies with severe early onset preeclampsia affecting approximately 0.5% or 1:200. 10% of nulliparous patients will become preeclamptic.
- Preeclampsia is responsible for severe maternal complications such as coagulopathy, renal and liver failure, stroke and maternal death.
- Preeclampsia is associated with a four-fold increased risk for IUGR. Long-term health consequences for both mother and fetus include increased risk for obesity, cardiovascular disease, hypertension and diabetes.
- The 1:200 incidence of severe early onset preeclampsia compares to other diseases for which we screen – example, 1:500 birth incidence of Down syndrome; 1:2000 incidence of open neural tube defect; and 1:200 to 1:300 incidence of congenital heart disease.

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Pathophysiology and Mechanism of Action

Preeclampsia and IUGR are characterized by defective placentation eliciting inadequate uteroplacental blood perfusion and ischemia as screened for by Uterine Artery Doppler. Poor uterine artery blood flow is associated with biochemical and cellular evidence of impaired placental development and function. Inadequate perfusion and placental ischemia evoke endothelial dysfunction with platelet and clotting system activation as reflected in abnormal trending of biochemical analytes. Low-dose aspirin improves the transformation of uterine spiral arteries and protects against vasoconstriction and pathologic blood coagulation in the placenta and improves uterine artery blood flow.

If you would like your patient to receive FTPS, please add "Preeclampsia screening" to the prescription and we will perform the additional Uterine Artery Doppler and blood draw at the time of First Trimester Screening. Many insurance companies are not covering this screening, therefore, **$275** is HVRA's up-front cost at time of service covering Uterine Artery Doppler. NTD Laboratory will submit the bill for the maternal blood draw to the patient's insurance; however, if it is not covered the patient may receive a bill up to $200. For additional information and articles regarding FTPS, please visit our website at www.hvra.com.

Respectfully,

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