Point-of-care urine testing in pregnancy at Farrell Health Center

Performing point of care (POC) urine analysis (UA, or urine dip) at every prenatal visit is current practice throughout the Columbia/NYP prenatal sites. While there is little evidence supporting the routine and universal use of UA, it can give useful information, particularly in patients in high risk pregnancies. Common prenatal complications that may be reflected in POC urine testing include pre-eclampsia (PEC), gestational diabetes mellitus (GDM), and asymptomatic bacteriuria.

When interpreting POC urine tests, it is important to keep in mind the altered physiology of the pregnant patient, including increased glomerular filtration and changes in vaginal and vulvar flora. Findings that may be considered abnormal or concerning in the non-pregnant patient may be normal in the pregnant patient. This document is intended as a clinical guide to further studies and interventions abnormal findings on POC UA in the pregnant patient.

Proteinuria:

Per current guidelines, a diagnosis of pre-eclampsia (PEC) requires elevated blood pressure readings above 140 mmHg systolic or 90 mmHg diastolic. Furthermore, the presence or absence of protein on POC UA is poorly correlated with quantitative urine protein tests. Urine testing is not part of the routine screening process for PEC.

- Every prenatal visit should include blood pressure measurement as screening for PEC • In the normotensive patient, proteinuria on point of care urine testing does not necessitate further intervention or testing for preeclampsia
- The physician should use their clinical judgment and available guidelines for when to send serum and urine studies for PEC to establish baseline levels.
- Pregnant patients with history of chronic hypertension, PEC in a prior pregnancy, autoimmune disease, renal disease, pre-pregnancy diabetes, or multifetal gestation, or who develop gestational hypertension, all warrant baseline PEC testing regardless of UA results.
- In the prenatal patient with chronic or gestational hypertension, a rise in urinary protein of 2 levels (eg, 1+ to 3+ protein) may be interpreted as a prompt to examine for superimposed PEC
- Testing for PEC includes quantitative urine protein and creatinine testing, as well as serum creatinine, transaminases, and platelets. Proteinuria may be assessed either through 24 hour urine protein testing, or through quantitative urine protein to creatinine ratio

Glucosuria:

A diagnosis of gestational diabetes mellitus (GDM) is made through elevated blood glucose after glucose tolerance testing (GTT). Within the Columbia/NYP prenatal sites, this is generally done with the 3 hour, 100g fasting GTT; if 2 or more levels are above a cited values, the patient is diagnosed with GDM. It may also be made via a 2 hour 75g fasting GTT; if the screening, 1 hour 50g glucose challenge test (GCT) is markedly elevated; or if more than 50% of home fingerstick blood sugar levels are above established normal levels. Routine screening for GDM is done with GCT at 24-28 weeks gestation. For patients at high risk of developing GDM, due to prior GDM, obesity, or strong family history, screening is also done upon establishing care. Urine glucose testing is not part of the routine screening process for GDM.

- Every prenatal patient should be screened for GDM during their pregnancy
- For patients who have undergone routine 2nd trimester screening for GDM with normal results, glucosuria on urine dipstick may be attributed to physiologic changes of pregnancy and no further testing is warranted • In the patient with established GDM, marked glucosuria (4+) may reasonably prompt fingerstick blood glucose testing to evaluate for hyperglycemia in the office
- For patients with normal early GCT testing but who are at high risk of developing GDM marked glucosuria (4+) prior to 24-28 week testing may prompt early re-screening for GDM
- For the asymptomatic patient at low risk of developing GDM, screening for gestational diabetes should be deferred to routine GCT at 24-28wk GA regardless of glucosuria

Leukocyte esterase (LE) and Nitrites:

Leukocyte esterase on POC UA is a common finding. LE are a product of maternal leukocytes. Nitrites are a product of gram negative bacteria and are more highly specific for bacteriuria. Due to the increased risk of preterm delivery in the presence of bacteriuria, standard practice is to treat all instances of bacteriuria in the prenatal patient, regardless of presence or absence of symptoms. Routine screening is done with urine culture; POC UA is not considered a screening exam for bacteriuria at Columbia/NYP.

- All prenatal patients should be screened with urine culture at least once in pregnancy, ideally at 12-16 weeks GA
- Mild, (1+), moderate (2+) or high (3+) leukocyte esterase may reasonably prompt the physician to perform perform repeat urine culture
- Trace LE alone should not prompt urine culture

• Stable or unchanged LE from one visit to the next, with negative urine culture, does not necessitate repeat urine culture

• An increase in LE or new LE from one visit to another should prompt a urine culture •

Any nitrites on POC UA should prompt urine culture

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• Antibiotic treatment for bacteriuria should only be initiated if symptoms are present or with culture confirmation of bacteriuria

• Urinary tract symptoms, including dysuria, increase in frequency and urgency of urination, and suprapubic pain, should prompt urine culture and empiric treatment for urinary tract infection. The physician is expected to use their clinical judgment to differentiate between symptoms of pregnancy and of UTI

Ketonuria:

• In the low risk patient without GDM, the presence of ketones on urine may be reasonably interpreted as a sign of maternal dehydration and/or maternal catabolic state. This may be addressed with fluid resuscitation, orally or intravenously.

• In the patient with known GDM, ketonuria is potentially correlated with hyperglycemia. The physician should use their judgment on whether to test point of care blood glucose when ketonuria is noted. • If the patient is clinically well, there is no need to repeat urinalysis to confirm resolution of ketonuria.

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