

Utility of Routine Prenatal Urine Dipsticks

Authors: Michele Alba, MD and Zoë Cappe, MD

Introduction

Abrams Family Medicine Clinic performs a Urine Dipstick screen at each prenatal visit. This urine test is used to screen for gestational diabetes, preeclampsia, and UTI.

Journal of Family Medicine 2005 Practice Recommendations:

- Screening for gestational diabetes using urine dipsticks for glycosuria is ineffective with low sensitivities. False-positive tests outnumber true positives 11:1. A 50-g oral glucose challenge is a better test. Tests for glycosuria after this blood test are not useful (B).¹
- Proteinuria determined by dipstick in pregnancy is common and a poor predictor for preeclampsia with a positive predictive value between 2% and 11%. If the blood pressure is elevated, a more sensitive test should be used (B).¹
- After urinalysis at the first prenatal visit, routine urine dipstick screening should be stopped in low-risk women (B).¹

In 2000, the AAFP published an article on UTI in pregnancy stating:

- The increased number of false negatives and the relatively poor predictive value of a positive test make the faster methods less useful; therefore, a urine culture should be routinely obtained in pregnant women to screen for bacteriuria at the first prenatal visit and during the third trimester.²

The Abram's family medicine clinic is currently not following the above guidelines due to concerns for their high risk patient population. Therefore, the goal of our study was to determine the utilization of continued urine dipsticks in detecting rates of gestational diabetes, preeclampsia, and UTI within this specific patient population.

Methods

Thirty seven pregnant women receiving prenatal care at Abram's Family Medicine Clinic in Tucson, Arizona from January to July of 2017 were included in the study. In total, 143 routine urine dipsticks were performed by medical assistants to detect the presence of glucose, protein, nitrites and leukocyte esterase. These results were compared to the clinical outcomes of each patient in order to assess the sensitivity and specificity of urine dipsticks in predicting urinary tract infections, gestational diabetes mellitus, and preeclampsia.

Results

Gestational Diabetes

- The results of 35 patients were analyzed, of the total, 4 had gestational diabetes. Two people were excluded from the study due to inability to confirm GDM (1 left practice before GDM screening with standard 1hr gtt, 1 had abnormal screen without dx 3hr gtt).
- Using presence of glucose defined on a urine dipstick as >250mg/DL, the sensitivity 25% and specificity 100% for dipstick urinalysis were calculated. PPV = 100%, NPV = 91%. False negative = 75%.

Preeclampsia

- The results of 32 patients were analyzed, of the total, 1 had preeclampsia. Five people were excluded from the study due to conclusion of study prior to completion of pregnancy (3) vs. transferred out of study (1) vs. lost to f/u (1).
- Using presence of protein defined on a urine dipstick as >trace, the sensitivity 0% and specificity 32% for dipstick urinalysis were calculated. PPV = 0%, NPV = 91%. False positive rate = 67%.

Urinary Tract Infections

- The results of 143 patients were analyzed, of the total, 3 had UTI. No people were excluded from the study.
- Using presence of leukocyte esterase only, defined on a urine dipstick as >trace, the sensitivity 100% and specificity 46% for dipstick urinalysis were calculated. PPV = 3.7%, NPV = 100%. False positive rate = 86%. No one tested positive for nitrites and LE or nitrites alone. Two people with +LE were positive for something other than UTI, both were diagnosed with BV.



Table 1. Results

	Gestational DM	Preeclampsia	Urinary Tract Infection
Sensitivity	25	0	100
Specificity	100	32	46
PPV	100	0	3.7
NPV	91	91	100
False Positive Rates	75	67	86

Conclusions

- Based on the literature review performed, and data gathered from our current clinic population, routine dipstick screening for protein, glucose and leukocyte esterase has low utility and should be eliminated from routine screening practices.
- Women who are known or perceived to be at high risk for gestational diabetes or preeclampsia should continue to be monitored closely and screened using the current updated AAFP and ACOG guidelines.
- A limitation of the study was the relatively small sample size. For this reason, these findings cannot be generalized to the broader community based on this study alone.

References

1. William A. Alto, MD, *No need for glycosuria/proteinuria screen in pregnant women*, J Fam Pract. 2005 November;54(11):978-983
2. John E. Delzell Jr. MD, and Michael L. Lefevre MD, *Urinary Tract Infections During Pregnancy*, Am Fam Physician. 2000 Feb 1;61(3): 713-720.

Acknowledgments

This project was mentored by Dr. Algotar, Dr. Kolman, Dr. Meehan and Dr. Cunningham whose help is acknowledged with great appreciation.