

# Letters to the Editor

## Additional Considerations for the Microscopic Evaluation of Urine

**To the Editor:** I appreciate the comprehensive and well-organized article by Dr. Hitzeman and colleagues.<sup>1</sup> I would like to offer additional information about the microscopic evaluation of urine.

The microscopic evaluation of centrifuged urine for red blood cells is roughly quantitative, and not as exact as an Addis count because there are usually no or very few red blood cells.<sup>2</sup> Red blood cells in a urine sample lyse if the specific gravity (osmolality) is low or the pH is high. This phenomenon varies, but lysis is usually partial or complete with a specific gravity of less than 1.010 or a pH of 7 or greater. In either instance, a urine dipstick test is more accurate than microscopic evaluation.<sup>3-5</sup>

Urine with low osmolality can occur in several examples provided in the article. Urine can be alkaline or become alkaline due to the patient's diet or if the specimen is left for long periods without refrigeration. When a dipstick evaluation suggests the presence of red blood cells, care should be taken to ensure the specific gravity is greater than 1.010 and the pH is less than 7 before relying on a microscopic evaluation.

White blood cells are more ubiquitous in urine than red blood cells, but they also lyse with low specific gravity or high pH; therefore, the same considerations apply.

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**Author disclosure:** No relevant financial relationships.

## References

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**In Reply:** Thank you for your interest in our article on office-based urinalysis. There are caveats to consider when interpreting a dipstick or microscopic analysis of the urine. Thank you for highlighting possible false-negative microscopic results when red blood cells may have lysed due to diluted urine or a high pH. If the clinical picture does not support a corresponding false-positive dipstick result (e.g., myoglobinuria, hemoglobinuria, recent exercise, menses), clinicians should be vigilant and look at these dipstick markers. An immediate recollection or collection at a future date with a morning void to minimize confounding variables should be considered. Most importantly, urine should be refrigerated or analyzed in a timely manner after collection. Nothing good comes from a specimen lingering on the counter.

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