Microhematuria: AUA/SUFU Guideline. Letter.

J Urol 2020; **204**: 778.

To the Editor: Recently, the American Urological Association (AUA) revised its 2012 guidelines to maximize detection rates of urinary tract malignancies.[1] Microhematuria should be defined as $\geq$3 red blood cells (RBCs) per high-power field (16.5 RBCs/μL) on microscopic evaluation of a single, properly collected specimen. As there is insufficient evidence that urinary flow cytometry analyzers can accurately assess hematuria, microscopic quantification remains the referent standard.

Automated urine sediment analyzers have been introduced into clinical laboratories for multiple reasons, including reduced turnaround time, workflow efficiency and decreased between-observer variability.[2] Despite their widespread use, the AUA guideline does not take into account the use of automated sediment analyzers. Multiple studies reviewed the critical steps in manual urine sediment microscopy, demonstrating a coefficient of variation >100%, depending on the investigated parameter.[3–6]

As the analytical quality of sediment analysis has improved over the years, more attention needs to be paid to the pre-analytical phase, which has now become the major source of error. Well-standardized procedures for collection, transport and sample preparation should become the basis of an improved diagnostic strategy for urinalysis. Different pre-analytical variables may contribute to the imprecision of RBC detection, ranging from centrifugation speed and time, variable interpretations of RBCs in urine sediment by different technologists, and the residual amount of urine remaining in the tube for resuspension. Analytical performance evaluations of modern automated urinary flow cytometers as well as microscopic urine sediment analyzers have shown acceptable results, with an imprecision that is consistently and significantly less than that of manual microscopy throughout the entire ranges encountered in clinical practice.[7]

The guideline further states that microhematuria may not be defined by a positive dipstick test alone. It is stated that different confounding factors need to be taken into account, among which are myoglobinuria, dehydration, exercise, menstrual blood, or povidone-iodine.[1] We have demonstrated that also extremely high urinary pH values (pH >8), as seen in urinary tract infections due to urease producing bacteria, may result in decreased hemoglobin peroxidase activity. Peroxidase activity is strongly correlated with the urinary hemoglobin concentration and severity of hematuria.[8] Peroxidase reflectance data are useful for verifying flow cytometric data on urinary RBCs and can be used for developing expert systems to improve the quality of reported results.[8,9] The complementary metal oxide semiconductor (CMOS) technology for urine test strip reading has enabled accurate quantitative information about urinary RBCs. In contrast to what is stated in the guideline, RBC counts measured using flow cytometry (Sysmex UF-5000) showed a good agreement with the peroxidase reflectance ($r = 0.84$). Even hemoglobin released by partially lysed RBCs can be detected by the strip. An excellent within-run and between-run imprecision and an analytical sensitivity of 13.6 RBCs/μL of the Meditape UC-11A test strip was reported. An optimal activity of hemoglobin peroxidase was observed within a pH range of 5.0 to 6.5. Quantitative peroxidase activity data are complementary with flow cytometric analyses and show an added value in urinalysis.

Sincerely,

Matthijs N. Oyaert
Department of Laboratory Medicine
Ghent University Hospital
Ghent, Belgium

Marijn M. Speeckaert
Department of Nephrology
Ghent University Hospital
Ghent, Belgium
and
Research Foundation Flanders
Brussels, Belgium
and

Joris R. Delanghe
Departments of Nephrology and Diagnostic Sciences
Ghent University Hospital
Ghent, Belgium
email: Joris.Delanghe@ugent.be

1. Barocas DA, Boorjian SA, Alvarez RD et al: Microhematuria: AUA/SUFU guideline. J Urol 2020; **204:** 778.
2. Oyaert M and Delanghe J: Progress in automated urinalysis. Ann Lab Med 2019; **39:** 15.
3. Hannemann-Pohl K and Kampf SC: Automation of urine sediment examination: a comparison of the Sysmex UF-100 automated flow cytometer with routine manual diagnosis (microscopy, test strips, and bacterial culture). Clin Chem Lab Med 1999; **37:** 753.
4. Fenili D and Pirovano B: The automation of sediment urinalysis using a new urine flow cytometer (UF-100). Clin Chem Lab Med 1998; **36:** 909.
5. Jiang T, Chen P, Ouyang J et al: Urine particles analysis: performance evaluation of Sysmex UF-1000i and comparison among urine flow cytometer, dipstick, and visual microscopic examination. Scand J Clin Lab Invest 2011; **71:** 30.
6. Chien TI, Kao JT, Liu HL et al: Urine sediment examination: a comparison of automated urinalysis systems and manual microscopy. Clin Chim Acta 2007; **384:** 28.
7. Previtali G, Ravasio R, Seghezzi M et al: Performance evaluation of the new fully automated urine particle analyser UF-5000 compared to the reference method of the Fuchs-Rosenthal chamber. Clin Chim Acta 2017; **472:** 123.
8. Penders J, Fiers T and Delanghe JR: Quantitative evaluation of urinalysis test strips. Clin Chem 2002; **48:** 2236.
9. Oyaert MN, Himpe J, Speeckaert MM et al: Quantitative urine test strip reading for leukocyte esterase and hemoglobin peroxidase. Clin Chem Lab Med 2018; **56:** 1126.

Penile Prosthesis Insertion in the Era of Antibiotic Stewardship: Are Postoperative Antibiotics Necessary? Letter.

J Urol 2020; **203:** 611.

To the Editor: We read with great interest the article by Dropkin et al assessing the role of postoperative antibiotics following placement of inflatable penile implants.[1] The authors report a remarkably low rate of postoperative infections even without a postoperative antibiotic course, and we firmly believe that this is due to the application of the basic but essential rules aimed at reducing infectious complications in genitourinary prosthetic surgery. These are not discussed in the article as they are probably given as granted; we are not so sure that this is the case in the urological community worldwide.

We therefore respectfully suggest that a number of preoperative and perioperative steps have a significant role in reducing the risk of infection and device explantation and thus deserve to be mentioned: 1) preoperatively, urinalysis should exclude a urinary tract infection and glucose control should be normal according to glycosylated hemoglobin values;[2,3] 2) hygiene of penis and scrotum must be optimized on the day of surgery with accurate cutaneous cleansing with a chlorhexidine-based liquid detergent and proper hair removal carried out with clipping rather than shaving;[4] 3) the surgical field should be scrubbed with chlorhexidine-alcohol solution;[5] 4)

surgery should be ideally performed by more experienced surgeons and surgical time must be reduced to a minimum, as both factors have been associated with a reduced risk of surgical site infection;[6] 5) during the procedure the surgical field should be irrigated with an anti-microbial solution, especially if noncoated devices are used;[7] 6) skin surface contact should be minimized during the procedure applying a "no-touch technique;"[8] and 7) strategies to reduce hematoma formation should be employed, including Mummy Wrap and postoperative device inflation.[3] Once these principles and maneuvers are respected it makes sense to limit antibiotics to the prophylactic dose, and the authors should be commended for elegantly demonstrating this concept, although prospective randomized trials with larger samples are certainly needed to confirm their findings.

Respectfully,

Francesco Montorsi
Division of Experimental Oncology/Unit of Urology, URI; IRCCS Ospedale San Raffaele
Milan, Italy

University Vita-Salute San Raffaele
Milan, Italy

Paolo Capogrosso
Unit of Urology, ASST Sette Laghi—Circolo e Fondazione Macchi Hospital
Varese, Italy

Federico Dehò
Unit of Urology, ASST Sette Laghi—Circolo e Fondazione Macchi Hospital
Varese, Italy

University of Insubria
Varese, Italy
and

Andrea Salonia
Unit of Urology, ASST Sette Laghi—Circolo e Fondazione Macchi Hospital
Varese, Italy

University Vita-Salute San Raffaele
Milan, Italy
email: salonia.andrea@hsr.it

1. Dropkin BM, Chisholm LP, Dallmer JD et al: Penile prosthesis insertion in the era of antibiotic stewardship-are postoperative antibiotics necessary? J Urol 2020; **203:** 611.
2. Levine LA, Becher E, Bella A et al: Penile prosthesis surgery: current recommendations from the international consultation on sexual medicine. J Sex Med 2016; **13:** 489.
3. Carrasquillo RJ and Gross MS: Infection prevention strategies prior to penile implant surgery. Eur Urol Focus 2018; **4:** 317.
4. Tanner J, Norrie P, and Melen K: Preoperative hair removal to reduce surgical site infection. Cochrane Database Syst Rev 2011; CD004122.
5. Darouiche RO, Wall MJ, Itani KMF et al: Chlorhexidine-alcohol versus povidone-iodine for surgical-site antisepsis. N Engl J Med 2010; **362:** 18.
6. Henry GD, Kansal NS, Callaway M et al: Centers of excellence concept and penile prostheses: an outcome analysis. J Urol 2009; **181:** 1264.
7. Mandava SH, Serefoglu EC, Freier MT et al: Infection retardant coated inflatable penile prostheses decrease the incidence of infection: a systematic review and meta-analysis. J Urol 2012; **188:** 1855.
8. Eid JF, Wilson SK, Cleves M et al: Coated implants and "no touch" surgical technique decreases risk of infection in inflatable penile prosthesis implantation to 0.46%. Urology 2012; **79:** 1310.