

the steering committee of an imbalance in cancers. They contacted the DSMBs of IMPROVE-IT and SHARP. Merck was not informed of the imbalance.

In July 2008, Merck first became aware of the imbalance after database lock and unblinding and provided that information to the SHARP and IMPROVE-IT steering committees, informing them of the need to notify regulators and publicly disclose such information.

The clinical trial chairs arranged a meta-analysis of the data, independent of Merck, and reported the findings directly to regulators. The *Journal* published the analysis. Merck had no input

into and did not see the manuscript until after it was accepted for publication.

The DSMBs acted independently. We reject any suggestion to the contrary.

Michael Rosenblatt, M.D.

Peter S. Kim, Ph.D.

Merck & Co.

Whitehouse Station, NJ

michael.rosenblatt@merck.com

Drs. Rosenblatt and Kim report being employees of and holding stock in Merck and Co. No other potential conflict of interest relevant to this letter was reported.

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Point-of-Care Photomicroscopy of Urine

TO THE EDITOR: Microscopic examination of the urine sediment is an important tool for the diagnosis and management of renal and genitourinary disease.^{1,2} Photomicrographs of urine are useful both for teaching this procedure and for making a record of the findings that others may review.³ However, most microscopes are not equipped with integrated digital cameras because of the cost they add and their complex operation. As a result, photomicroscopy is often not available to clinicians and trainees in patient-care areas, thus documented urinary findings are lacking for review, subsequent discussion, or presentation at rounds or conferences.

We recently determined that we could photograph the urine sediment through a microscope eyepiece using inexpensive digital cameras (Canon A620 and Digital Elph SD1200 IS) or a cell-phone camera (Apple iPhone 4). We have been able to obtain clear photomicrographs (Fig. 1) and even polarized photomicroscopy or video recordings with various camera and microscope combinations that require minimal operator skill, offering the advantages of low cost and ready availability.

We obtained images as follows: When microscopy revealed a field of interest, the camera was placed about 0.5 to 1.0 cm over one of the eyepieces, allowing optimization of the image and light intensity by means of the camera's digital display. The auto-focus and exposure features

generally produced a circular image surrounded by a black rim as shown in the representative sample of unedited photomicrographs of urine sediments (Fig. 1). (See Fig. 1 in the Supplementary Appendix, as well as the accompanying video, both available at NEJM.org.) Although a single photomicrograph cannot provide complete information about the overall characteristics of the urine sediment, this limitation is present with all photomicrographs of urine.

The photomicrographs in Figure 1 demonstrate the value of photomicrography in the clinical setting for improving the diagnosis of renal disease and enhancing the teaching of urine microscopy to medical students and residents. Most residency directors believe urinalysis should be part of residency training, but studies in which objective methods are used indicate that residents are poorly trained in the performance of urinalyses.^{4,5}

This technique should be applicable to any microscopic preparation, such as an examination of joint crystals or analysis of blood smears. At our teaching conferences we have routinely reviewed pathological images of renal biopsy specimens but rarely photomicrographs of the corresponding urine sediments, in spite of their importance in diagnosis. We now include urine photomicrographs in our patient presentations. This has enhanced case discussions and, perhaps most importantly, has renewed the excite-



A video showing point-of-care examination of a urine sediment is available at NEJM.org

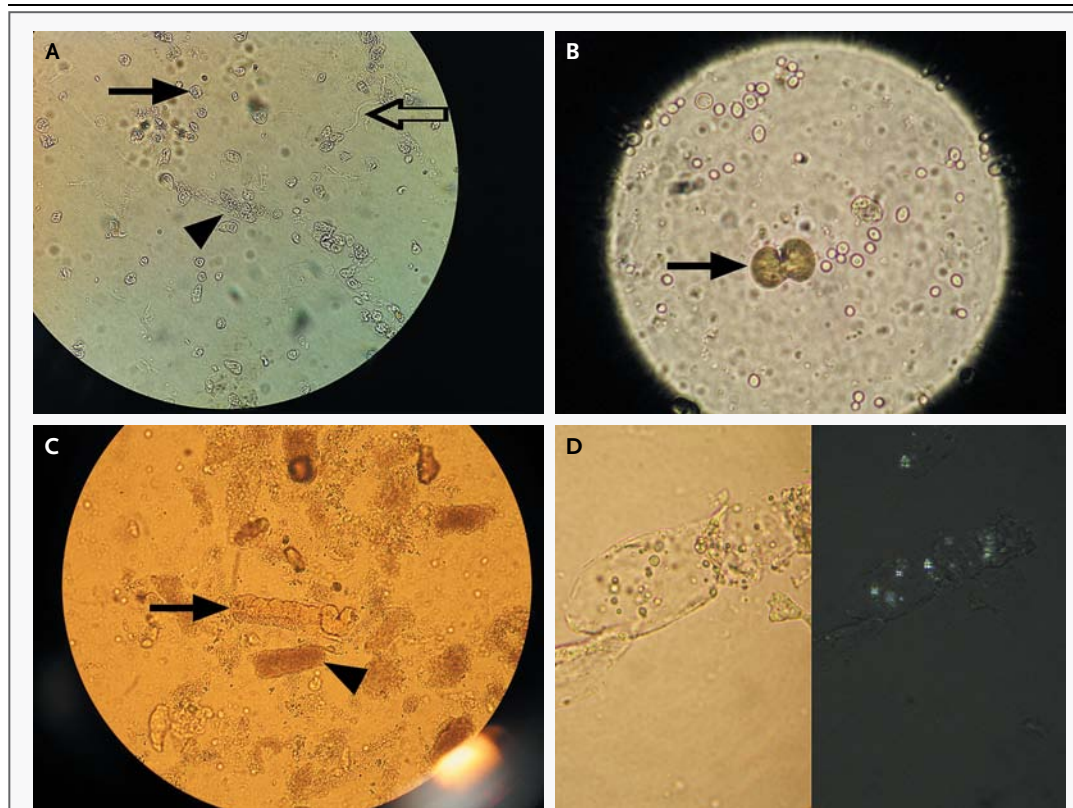


Figure 1. Photomicrographs of Urine Sediments Obtained with the Use of Digital Cameras and Cell-Phone Cameras.

Panel A shows granulocytes (solid arrow) and a white-cell cast (arrowhead) in urine from a patient with acute renal failure, which was diagnosed as drug-induced interstitial nephritis with the help of these findings obtained with the use of a cell-phone camera (Apple iPhone 4) (microscope magnification, $\times 440$). Fungi are also present (open arrow). Panel B shows a large, dumbbell-shaped crystalline form of calcium oxalate (the less-well-recognized form) (arrow) in urine sediment from a patient with nondysmorphic hematuria (obtained with a Canon A620) (microscope magnification, $\times 440$). Panel C shows pigmented waxy casts (arrow) and coarse granular casts (arrowhead) in urine sediment from a patient with acute tubular necrosis and jaundice (obtained with a Canon A620 digital camera) (microscope magnification, $\times 440$). Panel D shows a lipid cast (left) and the same cast as seen with polarized light (right), revealing the characteristic Maltese crosses of cholesterol esters in urine sediment from a patient with diabetes and proteinuria in the nephrotic range (obtained with a Canon A620 with an optical zoom) (microscope magnification, $\times 440$).

ment of examining urine sediments among our faculty and trainees.

Walter P. Mutter, M.D.
Robert S. Brown, M.D.

Beth Israel Deaconess Medical Center
Boston, MA
wmutter@bidmc.harvard.edu

Disclosure forms provided by the authors are available with the full text of this letter at NEJM.org.

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