The Hong article is in concordance with a study we previously conducted comparing 24-hour urine calcium (24HUC) levels to the spot urine calcium-to-creatinine ratio (SUCCR). We recruited vitamin D–insufficient postmenopausal women for a study evaluating the change in calcium absorption with vitamin D repletion. We excluded women with a history of nephrolithiasis or chronic kidney disease. During the study, women completed two 24-hour stays in the University of Wisconsin Clinical and Translational Research Core. During these overnight stays, trained research nurses collected 28 fast- ing morning spot urine specimens and paired 24-hour urine collections from patients.

Like Hong et al, we compared the 24HUC and SUCCR measurements using Pearson’s tests and Bland-Altman analyses. Our correlation was poor (r = .57) and our Bland-Altman analysis revealed a significant difference between the two measurements, with the SUCCR underestimating the 24HUC by an average bias of 83 ± 14 mg. In addition, we assessed sensitivity of the SUCCR to predict hypercalciuria using multiple definitions. These included upper limits of normal of 250 mg/24-hour and 4 kg/mg/24-hour and limits established from a reference population. Compared with other definitions, the SUCCR demonstrated the highest sensitivity for hypercalciuria when using an upper limit of normal of 4 kg/ mg/24-hour. However, this sensitivity was only 33%.

In addition to comparing the 24HUC and SUCCR levels, we used regression models to predict 24HUC levels using the SUCCR and other variables. These variables included demographics and laboratory and nutritional measures. We constructed a formula using multivariate linear regression to predict 24HUC. In our sample, SUCCR, body mass index, parathyroid hormone, and 1,25(OH)2D accounted for 75% of the variation in 24HUC. A formula incorporating these readily measurable variables demonstrated a diagnostic sensitivity of 100% and no significant bias using the Bland-Altman test. We plan to validate the formula in an upcoming research study.

Hong’s study differs from ours in patient population and sample collection methods. Their study targeted stone formers and collected 24-hour urine specimens in outpatients. We targeted healthy postmenopausal women and collected 24-hour urine specimens during inpatient research visits. Even with these differences, both studies highlight the need to stop using spot urine specimens to estimate 24-hour urine calcium values. Until a better method is developed and validated, providers should stop using a SUCCR or another spot urine metabolite/creatinine level in place of a 24-hour urine collection.

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References

Reply by the Authors

TO THE EDITORS:

We would like to thank the authors of the letter for their comments. As pointed out, spot urine metabolite-to-creatinine ratio cannot be used to replace the 24-hour metabolite measurement as shown by Jones et al, as well as in our study. Both of these measurements are not suitable to be used interchangeably. In the study by Jones et al, spot urine calcium-to-creatinine ratio (SUCCR) was shown to systematically underestimate 24-hour urine calcium (24HUC) and thus contributed to underdiagnosis of hypercalciuria among their postmenopausal women with vitamin D insufficiency, which might pose undue risk to their study subjects. Nevertheless, we believe that spot urine test has a role in screening, monitoring, or even diagnosis in certain situations as long as the limitations are considered. In urinary stone diseases, calculated urinary saturation from early morning spot urine parameters could still be an essential part of optimum urinary stone management. Spot urine saturation that peaks at night or early morning, represents the period with the most pronounced risk of precipitation and crystallization. Critical supersaturated urine with stone-forming compounds for just a brief duration is believed to be decisive on the likelihood for crystallization (urinary stone formation) to occur. Thus, it serves as an important screening and monitoring tool in assessing the lithogenic potential among the stone-formers and subsequently helps to single out those with recurrent potential. Conversely, 24-hour urine sample gives the average saturation or concentration over the 24 hours that may mask the brief lithogenic compounds’ concentration peaks duration within a day. Hence, this may explain the finding of “apparently” normal 24-hour urinary metabolic evaluation profile among the stone-formers.
On another scenario, the recommendation by the Kidney Disease: Improving Global Outcomes (KDIGO) to use early morning spot albumin (protein) to creatinine ratio as the primary collection method for detecting albuminuria—a marker for kidney damage—further corroborates the importance of spot urine creatinine ratio as an important diagnostic tool. Furthermore, Jones et al also demonstrated that with appropriate adjustment (multivariate linear regression model), SUCCR provides highly correlated calculated 24-hour urine calcium levels with those measured and has a diagnostic sensitivity of 100% for hypercalciuria. In short, spot urine sample does not provide an equal result with 24-hour urine sample but still serves as an important tool in the clinical setting, in particular because the 24-hour urine collection is bound with various collection problems or pitfalls—poor compliance, incomplete or overcollection, and storage and preservation issues.

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References

Prostate-specific Antigen Self-testing Among British Association of Urological Surgeons (BAUS) Consultant Urologists

TO THE EDITOR:

Prostate cancer is the most common noncutaneous male malignancy, and its incidence has significantly increased since the introduction of the prostate-specific antigen (PSA) screening serum test. Although the increasing incidence of prostate cancer can be attributed to the widespread use of PSA as a screening tool, an expected reciprocal decrease in mortality from prostate cancer has not been demonstrated. The recently published American and European screening studies also described no conclusive evidence that PSA has any clear benefit as a screening tool. Despite these clinical limitations, approximately 95% of male urologists and 78% of primary care physicians >50 years have checked their own PSA level in the United States. We sought to assess whether BAUS consultant urologists were screening themselves for prostate cancer by checking their own serum PSA levels.

An anonymous on-line survey was created and sent to all male urologists within Great Britain and Ireland who had a documented electronic mail address listed in the British Association of Urological Surgeons members’ handbook. The survey was successfully delivered to 300 electronic mail addresses and included the following 3 questions:

1. How old are you?
2. Have you ever had your PSA level checked?
3. Do you check your PSA level annually?

We received 90 replies (30%). Of the 90 replies, 8 were excluded because all 3 questions had not been answered. The mean age of the respondents was 53.51 years (range 35-74, median 53, mode 52). In stark contrast to American urologists, most consultant urologists within Great Britain and Ireland had not had their PSA level checked (57%, n = 47; Table 1). Within that group, only 16 (19.5%) of the respondents had checked their PSA level annually (mean age 58.86 years, range 51-71). The prevalence of PSA self-testing was mostly confined to those >50 years (Table 1), with only 6 (24%) of 25 consultant urologists <50 years old having had their PSA level previously checked.

In contrast, 17 (42.2%) of 36 and 10 (52.6%) of 19 respondents aged 51-60 years and 61-65 years, respectively, had had their PSA level checked (57%, n = 47; Table 1). Within that group, only 16 (19.5%) of the respondents had checked their PSA level annually (mean age 58.86 years, range 51-71). The prevalence of PSA self-testing was mostly confined to those >50 years (Table 1), with only 6 (24%) of 25 consultant urologists <50 years old having had their PSA level previously checked.

The results of this short survey highlight the reservations present among British and Irish urologists regarding PSA measurement as a screening tool for prostate cancer. The difference between these data and those from the United States emphasizes the controversy surrounding screening for prostate cancer.

Table 1. Prevalence of prostate-specific antigen “self-testing” among urologists according to age

<table>
<thead>
<tr>
<th>Age (y)</th>
<th>Urologists (%)</th>
</tr>
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<tbody>
<tr>
<td>&lt;50</td>
<td>6/25 (24)</td>
</tr>
<tr>
<td>51-60</td>
<td>17/36 (42.2)</td>
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<tr>
<td>61-65</td>
<td>10/19 (52.6)</td>
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<tr>
<td>&gt;65</td>
<td>2/2 (100)</td>
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<tr>
<td>Total</td>
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</table>