

## Letter to the Editor

### Hemodilution of Prostate-Specific Antigen Levels Among Obese Men

**In Response:** We appreciate the insightful comments from Rundle and colleagues and are also gratified that the results from recent articles show similar findings. However, we recommend caution before adopting a standardized formula for clinical use to adjust prostate-specific antigen (PSA) in larger men.

The studies to date that have investigated the hemodilution hypothesis in men presumed to be free of prostate cancer have included men with relatively low PSA levels that differed only minimally among body mass index categories (1, 2). In the example provided by Rundle and colleagues, the magnitude of the hemodilution effect increases with increasing body size and with higher PSA levels. However, a weight of 143 kg as seen in the example is extreme, representing a small proportion of the U.S. male population (the 95th percentile of men ages 50-59 is only 124.4 kg; ref. 3). Further, most (~90%) asymptomatic men undergoing PSA testing have a PSA level well below 4 ng/mL (3, 4). Therefore, the difference between measured and adjusted PSA values is not likely to affect the interpretation of a PSA result for a large majority of men. In addition, it has been noted by others that the difference is unlikely to cause delayed detection of disease because "the predicted magnitude of the BMI effect is well within the range of the normal analytic and biological day-to-day variation of the PSA test" (5). Nevertheless, given the association between body mass index and an increased risk of high-grade disease and prostate cancer-specific mortality, it is plausible that this special subgroup of men represents precisely those in whom early detection and treatment would be beneficial. However, a prospective study is necessary to assess the effect of the proposed adjustment on the sensitivity and specificity of PSA for prostate cancer outcomes for large men.

Additionally, the equation, as presented, may be too complex for practical use in the clinical setting; a web-based calculator that allows input of the readily available variables could facilitate the use of such an adjustment formula, should the equation be further validated.

We acknowledge the mounting evidence to support the hemodilution theory, and although we are hesitant to advocate the introduction of a standardized formula to adjust PSA for large body size at present, we fully support further exploration of alternative thresholds for individualized clinical follow-up.

Amanda Black  
Early Detection Research Group,  
National Cancer Institute,  
Bethesda, Maryland

Robert L. Grubb, III  
Gerald L. Andriole, Jr.  
Division of Urology,  
Washington University School of Medicine,  
St. Louis, Missouri

### Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

### References

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