

JENNIFER ST. SAUVER: My name is Jennifer St. Sauver. I'm an epidemiologist and associate professor of epidemiology at the Mayo Clinic in the Department of Health Sciences Research. And I'm talking today about our new study entitled "Sixteen-Year Longitudinal Changes in Serum Prostate-Specific Antigen Levels: The Olmsted County Study." It will be published in the January 2012 issue of *Mayo Clinic Proceedings*.

Just to give you some background about our study, there's been a lot of information in the news lately about prostate-specific antigen, or PSA, testing. Right now, the problem with using this test is that physicians can't tell which prostate cancers are going to progress and cause lots of problems for men and which ones are never going to progress and never cause any problems for the man during his lifetime. Unfortunately, PSA is really the only biomarker we have for prostate cancer right now.

And it's been suggested that it's maybe not just the level of prostate-specific antigen that's important for detecting prostate cancer, but how rapidly this level changes over time. So maybe the men whose levels are changing very rapidly over a one- or two-year period could be the men who are at a high risk of having a very aggressive prostate cancer. And so we conducted our study looking at changes in prostate-specific antigen in a population of men residing in Olmsted County, Minnesota.

These men have been participating in a long-term cohort study. They were recruited in 1990, and they were followed forward for up to 16 years. During their follow-up, they came into the clinic and received a full urologic examination. And that included serum samples for assessing PSA levels.

We were looking at this population in particular because these are healthy men. And we wanted to know what normal changes in PSA levels look like over time because it's really difficult to determine if changes in levels are abnormal if you don't have a normal population to compare to. And we found that, in this relatively healthy population of men, PSA levels were changing at a rate of about 3% to 4% per year.

But we also found that there's a lot of variability in this population as well. Some men could have up to a 50% change over time. So when you try to understand how this relates to clinical practice, what we're really showing is what happens just in a normal population, the kind of population that would come into a typical urology clinic. And it also allows clinicians and patients themselves to understand what is the upper limit of normal to determine if their own personal changes-- or if a doctor is assessing a patient, if the patient's changes are really outside of what you would normally expect.

The next steps for this particular study are to understand what's happening in other populations as well because our study was conducted only among a white, Caucasian man of European descent. And we know that there are differences in prostate cancer risk among different populations. For instance, we know that African-Americans have a higher rate of more severe prostate cancer. And it could be that changes in PSA levels in that type of population could also be helpful in finding more aggressive cancers in African-American men.

Also, our results really only apply again to healthy men. And we need to determine whether or not rapid changes can help separate out healthy men from those who have aggressive prostate cancer. So in summary, in our study, we have described the changes in PSA over time among a normal population. And really the take-home message of our study is that men with very rapidly increasing PSA levels in the upper range of the upper limit of normal really probably should be evaluated more closely to determine if those changes in PSA can be attributed to a benign condition, maybe a prostate infection, or if perhaps a prostate biopsy should be scheduled to look for more severe prostate cancer.

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