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Referral Patterns, Procedures, and Outcomes of a Large Community- Based Urology Group: a Retrospective Chart Review

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Introduction

According to the National Cancer Institute, prostate cancer is the most common non-cutaneous malignancy diagnosed in American men. Approximately 164,690 men will be diagnosed and 29,430 men will die from prostate cancer (PCa) in 2018 [1]. Prostate cancer specific antigen (PSA) is a serine-protease enzyme secreted by both normal and neoplastic prostatic tissue [2]. PSA is secreted into the glandular ducts of the prostate, and is elevated in the serum with prostatic inflammatory and neoplastic disease, thus serving as a marker for prostatic metastasis [2].

Since the introduction of prostate specific antigen (PSA) the diagnosis incidence of prostate cancer has increased drastically. Over the same time period, prostate cancer mortality has decreased almost 40% [1,3,4]. The United States Preventive Services Task Force (USPSTF), however, recommended against prostate cancer screening in men older than age 75 and noted insufficient evidence to determine the balance of benefits and harms of screening for prostate cancer in men younger than age 75, grade D (Fig. 1) [5]. As a result of the USPSTF recommendations, there has been a decrease in prostate cancer screening using prostate needle biopsies, digital rectal exams and PSA levels [6,7].

Grade	Definition
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

Figure 1. The USPSTF recommendation grade definitions [8].

Objectives

The purpose of our study is to assess the effects of the USPSTF grade D recommendation for PSA based screening on new PCa diagnoses within a large-community based private practice setting.

Methods

We completed a retrospective chart review of men with an elevated PSA seen in our clinic between May 2009–May 2015 who had undergone a prostate biopsy and were diagnosed with PCa. Further stratification of patients by age and risk category was investigated (Very low risk PCa was diagnosed according to Epstein criteria, while low, intermediate and high risk were classified according to D'Amico assessment). A student's T-test was used to compare means between groups, and a chi-squared test of independence was performed to examine the relation between date of screening and study variables.

Results

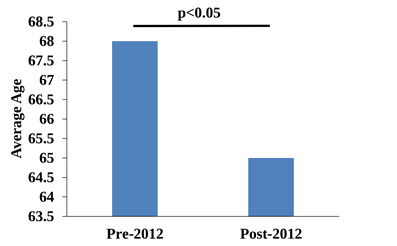

Figure 2. Average age for patient groups admitted before and after 2012, p<0.05 (*N*= 619 vs 687, respectively).

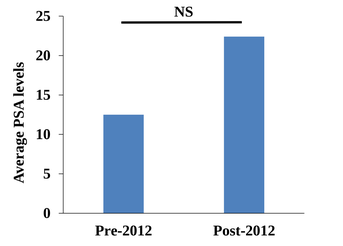

Figure 3. Average PSA levels in patients admitted before and after 2012, p>0.05 NS (*N*= 619 vs 687, respectively).

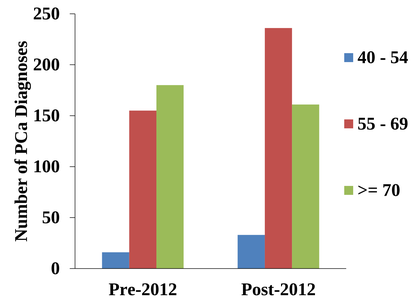

Figure 6. Age-stratification shows an increase in the majority of admitted patients from being ≥70 years of age (51%) to being 55-69 years (55%) after the year 2012 (Chi-squared test $p < .01$).

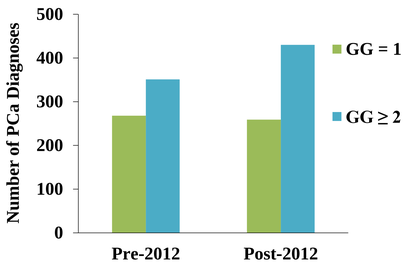

Figure 4. Patients sub-grouped into gleason score (GG) shows an increase in clinically significant prostate cancer GG ≥ 2 in the post-2012 group compared to pre-2012, with 430 patients vs 351, respectively (Chi-sqaured test $p < .05$).

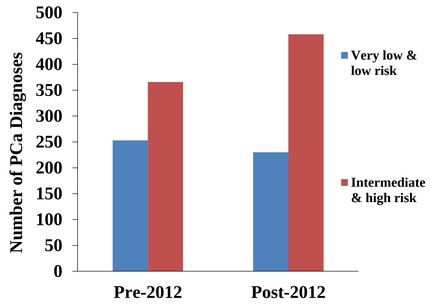

Figure 5. A significant relationship is depicted between cancer risk and time period when patients are admitted. There is an increase in patients with intermediate and very high risk cancer in the post-2012 group, and less in the very low and low risk group compared to the pre-2012 group (Chi-squared test $p < 0.01$).

Discussion

The USPSTF has issued recommendation against the screening of prostate cancer using PSA levels for men younger than 75 years of age, noting insufficient evidence that benefits outweigh the harm associated with the screening test. Since then, practices and clinics have reported reduced screening measures with an associated increase in prostate cancer diagnoses following the recommendation [7].

We investigated the impact of the USPSTF recommendation on the new diagnoses of PCa in a community based private clinical practice. We report a shift in the PCa characteristics of admitted patients with elevated serum PSA levels. Overall, patients admitted were younger after the recommendations. Specifically more patients below the age of 70 years were admitted due to elevated PSA levels after 2012, and less were admitted over the age of 70. In addition, patients presented with a significantly more developed prostatic tumour (GG ≥ 2), and more patients were seen with intermediate and high risk cancer upon examination as compared to low and very risk cancer.

These observations suggest a possible role for the recommendations in the increasing trend of more advanced prostatic neoplasia seen on initial examination. This could be due to the decrease of early screening measures with less biopsies, digital rectal exams as well as PSA level monitoring performed by primary care physicians. However, this merits further investigation into the role of the recommendations in higher risk prostate cancer diagnoses.

Conclusion

We observed that following the 2012 USPSTF recommendations, there was a significant increase in patients with clinically significant prostate cancer GG ≥ 2, with the majority being 55-65 years of age. In addition we observed a decrease in the diagnosis of very low and low risk PCa with an increased incidence of intermediate and high risk PCa.

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