**Client**
HEALTH BENCHMARKS, INC. STANDARD ALGORITHM
*Implemented for Blue Cross Blue Shield of Illinois*

**Measure Title**
DIAGNOSIS AND FOLLOW-UP OF PROSTATE CANCER

<table>
<thead>
<tr>
<th>Disease State</th>
<th>Cancer</th>
<th>Indicator Classification</th>
<th>Disease Management</th>
</tr>
</thead>
</table>

**Strength of Recommendation**
B

**Organizations Providing Recommendation**
- American Society for Therapeutic Radiology and Oncology
- American Urological Association
- National Comprehensive Cancer Network

**Clinical Intent**
To ensure that all eligible males diagnosed with prostatic cancer receive the necessary follow-up monitoring services at a clinically appropriate frequency.

**Physician Specialties**
Family Practice, General Practice, Internal Medicine, Mixed Specialty

**Background**
**Disease Burden**
- In the United States, prostate cancer is the most commonly diagnosed cancer in men, and the second most common cause of cancer death in men.[1]
- The American Cancer Society estimated that in 2007, approximately 218,890 men will be diagnosed with prostate cancer, and about 27,050 men will die from it.[1]
- Even though there is a 17% lifetime risk of developing prostate cancer, the risk of dying from prostate cancer is only about 3%.[1, 2]
- The relative five-year survival rate for patients with prostate cancer diagnosed in the local or regional stages approaches 100%, while the relative 10 and 15-year survival rates are 93% and 77%, respectively.[1]

**Reason for Indicated Intervention or Treatment**
- Prostate specific antigen (PSA) screening after treatment for prostate cancer can help detect recurrences.[3]
- For patients deciding to undergo watchful waiting instead of receiving treatment after being diagnosed with prostate cancer, PSA testing can help differentiate between slower growing cancers and more aggressive ones, for which patients may elect to receive definitive treatment.[4]

**Evidence Supporting Intervention or Treatment**
- A study of almost 1,800 prostate cancer patients showed that 77% of the 339 patients with recurrences were detected solely by an increase in PSA level, and 98% by an increase in PSA level plus local or distant recurrence.[3]
A recent study using long-term cohort data provides strong evidence of a highly significant association between long-term cancer risk and PSA levels measured at early middle age. This study, involving 21,277 middle-aged men followed for up to 25 years, found that a blood PSA increase of 1 ng/mL was associated with an increase in odds of prostate cancer of 3.69 (95% CI, 2.99 to 4.56).[5]

Few studies have examined the desired frequency of PSA monitoring, and there is no community standard.[6] A survey of 1,050 American Urological Association members showed appreciable variation in the frequency of PSA testing after radical prostatectomy for localized prostate cancer, though respondents generally recommended serum PSA testing every 3 months in the first year, every 6 months in years 2 to 5, and yearly thereafter.[7]

One randomly controlled trial examined the relationship between serum PSA levels and the future cumulative risk of prostate cancer. Among the 5,855 men, 539 cases of prostate cancer (9.2%) were detected after a median follow-up of 7.6 years. There was an increasing incidence of prostate cancer with increasing PSA levels, with a 0% incidence in men within 3 years who had an initial PSA level of <1 ng/mL. The study concluded that testing intervals should be individualized based on the initial PSA level and that men with an initial PSA level of <1 ng/mL can safely be scheduled for a 3 year treating interval.[8]

There are some current large-scale studies that intend to examine the effects of PSA screening on patient mortality.[9-11] However the follow-up time for many of these studies is too short to provide data on mortality rates. The studies that do provide this data are mixed in opinion.

One large randomized controlled trial showed a benefit to PSA screening in a group of 46,486 men aged 45-80 years. A Cox proportional hazards model of the age at death from prostate cancer shows a 62% reduction (P < 0.002, Fisher's exact test) of cause-specific mortality in the screened men (P = 0.005).[12]

In another randomized controlled trial involving 9,026 men aged 50-69 years, there were 85 (5.7%) cancers detected in the screened group (SG), 42 of these in the interval between screenings, and 292 (3.8%) in the unscreened group (UG). In the SG 48 (56.5%) of the tumors and in the UG 78 (26.7%) were localized at diagnosis (p < 0.001). In the SG 21 (25%) and in the UG 41 (14%) received curative treatment. However, there was no significant difference in total or prostate cancer-specific survival between the groups.[13]

However, information gained indicates repeated testing may be more useful in identifying cancers than a single test alone. The velocity with
which PSA increases per year may improve specificity of the test; a PSA velocity exceeding 0.75 ng ml\(^{-1}\) year\(^{-1}\) has been associated with a higher risk of prostate cancer than a slower rise in PSA.[14] Furthermore, PSA velocity may predict time to relapse in patients with previous diagnoses of prostate cancer.[15]

**Clinical Recommendations**

- For initial diagnoses of prostate cancer, the American Urological Association (AUA), the National Comprehensive Cancer Network (NCCN) and the American Society for Therapeutic Radiology and Oncology (ASTRO) recommend checking PSA as the initial work up of prostate cancer.
- To detect disease recurrence, the AUA recommends periodically offering PSA testing in the post-treatment management of prostate cancer.[16]
- The appropriate frequency of testing is somewhat controversial [6], but most experts and organizations agree that follow-up PSA testing should be performed at least annually. Some experts recommend checking PSA levels every 6 months for the first two years after treatment, and then annually.[17] Others recommend tailoring the frequency of testing to the pathologic grade and stage.[18]
- NCCN recommends that patients with a life expectancy ≥ 10 years who wish to undergo expectant management PSA do so up to every 3 months. For patients with life expectancy less than 10 years and wish to undergo expectant management, NCCN recommends monitoring PSA less frequently. Patients initially treated with intent to cure should have their serum PSA level checked every 6 to 12 months for the first 5 years and then rechecked annually. For patients with locally advanced or metastatic disease, PSA should be checked every 3 to 6 months.[4]
- ASTRO recommends PSA testing every 3 to 4 months during the first two years following radiation therapy for prostate cancer, and every 6 months thereafter.[20]

**Source**
Health Benchmarks, Inc.

**Denominator Definition**
Continuously enrolled males ages 18-90 years old by the end of the measurement year, who had a diagnosis of prostate cancer at any point in the available history.

**Denominator Codes**
Prostate Cancer
ICD-9 diagnosis code(s): 185

**Denominator Exclusion Definition**
N/A

**Denominator Exclusion Codes**
N/A
Numerator Definition: Members who had a PSA or free PSA fraction blood test during the measurement year.

Numerator Codes:
- PSA or free PSA fraction blood test
- CPT-4 code(s): 84152-84154
- HCPCS code(s): G0103

Physician Attribution Description: Score all physicians (in the selected specialties) who saw the member during the measurement year.

References:
14. Catalona, W.J., et al., Comparison of prostate specific antigen...


