CME CREDIT

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Men's health 2018: BPH, prostate cancer, erectile dysfunction, supplements

ABSTRACT

This review describes the latest research and guidelines for 4 topics in men's health commonly addressed by primary care physicians: the diagnosis and treatment of benign prostatic hyperplasia (BPH), prostate cancer, and erectile dysfunction and the evidence concerning the use of dietary supplements in men.

KEY POINTS

The combination of an alpha-blocker and a 5-alpha reductase inhibitor is an effective regimen for BPH. Withdrawing the alpha-blocker from the combination can be considered if symptoms have been well controlled after 1 year of combination therapy.

A new look at 2 large trials of prostate-specific antigen screening strengthened evidence that testing in the right patient population can reduce deaths from prostate cancer, but a third recently published trial found no benefit to 1-time screening.

Magnetic resonance imaging offers a better method than ultrasonography-guided biopsy to triage patients thought to be at high risk of prostate cancer and tends to limit costly overtreatment of disease that likely would not cause death.

Erectile dysfunction is often associated with chronic disease and may suggest the need to screen for cardiovascular disease.

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PRIMARY CARE PHYSICIANS are tasked with a wide variety of issues affecting men. This article reviews the latest research in 4 areas of men's health commonly addressed in primary care:

- Medical management of benign prostatic hyperplasia (BPH)
- Prostate cancer screening and treatment
- Medical management of erectile dysfunction
- Use of supplements.

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MEDICAL MANAGEMENT OF BPH

An 84-year-old man with a history of hypertension, type 2 diabetes, hyperlipidemia, BPH, mild cognitive impairment, and osteoarthritis presents for a 6-month follow-up, accompanied by his son.

Two years ago he was started on a 5-alpha reductase inhibitor and an alpha-blocker for worsening BPH symptoms. His BPH symptoms are currently under control, with an American Urological Association (AUA) symptom index score of 7 of a possible 35 (higher scores being worse).

However, both the patient and son are concerned about the number of medications he is on and wonder if some could be eliminated.

Assessment tools

BPH is a common cause of lower urinary tract symptoms in older men. Evidence-based tools to help the clinician and patient decide on when to consider treatment for symptoms are:

- The AUA symptom index[1]
- The International Prostate Symptom Score (IPSS).[2]

An AUA symptom index score or IPSS score of 8 through 19 of a possible 35 is consistent with moderate symptoms, while a score of 20 or higher indicates severe symptoms.

Combination therapy or monotherapy?

Monotherapy with an alpha-blocker or a 5-alpha reductase inhibitor is often the first-line treatment for BPH-related lower urinary tract symptoms.[3] However, combination therapy with both an alpha-blocker and a 5-alpha reductase inhibitor is another evidence-based option.

The Medical Therapy of Prostatic Symptoms study,[4] a randomized controlled trial, reported that long-term combination therapy reduced the risk of BPH clinical progression better than monotherapy. The same trial also found that either combination therapy or finasteride alone (a 5-alpha reductase inhibitor) reduced the risk of acute urinary retention and the future need for invasive therapy.

Monotherapy after a period of combination therapy?

There is also evidence to support switching from combination to monotherapy after an initial treatment period.

An alpha-blocker plus a 5-alpha reductase inhibitor is an effective regimen for BPH

Matsukawa et al[5] examined the effects of withdrawing the alpha-blocker from BPH combination therapy in a study in 140 patients. For 12 months, all patients received the alpha-blocker silodosin and the 5-alpha reductase inhibitor dutasteride. At 12 months, the remaining 132 patients (8 patients had been lost to follow-up) were randomized to continue combination therapy or to take dutasteride alone for another 12 months. They were evaluated at 0, 12, and 24 months by questionnaires (the IPSS and Overactive Bladder Symptom Score) and urodynamic testing (uroflowmetry, cystometrography, and pressure-flow studies).

There were no significant differences in subjective symptoms and bladder outlet obstruction between patients who continued combination therapy and those who switched to dutasteride monotherapy. In the monotherapy group, those whose symptoms worsened weighed more (68.8 kg vs 62.6 kg, P =.002) and had a higher body mass index (BMI) (26.2 kg/m^2 vs 22.8 kg/m^2, P < .001) than those whose symptoms stayed the same or got better.

These findings of successful alpha-blocker withdrawal were consistent with those of other studies.

The Symptom Management After Reducing Therapy study[6] showed that 80% of men with an IPSS score less than 20 who changed to dutasteride monotherapy did not have a noticeable worsening of their symptoms.

Baldwin et al[7] noted similar success after withdrawing the alpha-blocker doxazosin in patients on finasteride.

Review all medications

The National Health and Nutrition Examination Survey noted that the estimated prevalence of polypharmacy increased from 8% in 1999 to 15% in 2011.[8] Many commonly used medications, such as decongestants, antihistamines, and anticholinergic agents, can worsen BPH symptoms,[9] so it is reasonable to consistently review the patient's medications to weigh the risks and benefits and determine which ones align with the patient's personal care goals.

BPH: Take-home points

- Combination therapy with an alpha-blocker and a 5-alpha reductase inhibitor is an effective regimen for BPH.
- Polypharmacy is a significant problem in the elderly.
- Withdrawing the alpha-blocker component from BPH combination therapy can be considered after 1 year of combination therapy in patients whose symptoms have been well controlled.

PROSTATE CANCER SCREENING AND TREATMENT

A 60-year-old patient calls you after receiving his laboratory testing report from his insurance physical. His prostate-specific antigen (PSA) level is 5.1 ng/mL, and he has several questions:

- Should he have agreed to the screening?
- How effective is the screening?
- What are the next steps?

Is PSA screening useful?

Over the last few years, there has been great debate as to the utility of screening for prostate cancer.

The US Centers for Disease Control and Prevention[10] reported that in 2014, an estimated 172,258 men in the United States were diagnosed with prostate cancer, but only 28,343 men died of it. These statistics support the notion that screening programs may be detecting what might otherwise be a silent disease.

The US Preventive Services Task Force (USPSTF)[11] recommends against blanket PSA screening, in view of the low probability that it reduces the risk of death from prostate cancer. For men ages 55 through 69, current guidelines give a grade C recommendation to PSA screening, meaning there is moderate agreement that the benefit is likely small, and screening should be selectively offered based on professional judgment and patient preference. In men ages 70 and older who are not at high risk, the guideline gives screening a grade D recommendation, meaning there is moderate evidence that there is no benefit from the practice. This is a change from the 2012 USPSTF guidelines,[12] which gave a grade D recommendation to PSA screening for all ages.

The American Urological Association[13] recommends against PSA screening in men under age 40 or ages 70 and older. It does not recommend routine screening in those ages 40 to 54 at average risk, but it says the decision should be individualized in this age group in those at higher risk (eg, with a positive family history, African American). At ages 55 through 69, it recommends shared decision-making, taking into account cancer risk and life expectancy. In those who opt for screening, an interval of 2 years or more may be preferred over annual screening to reduce the risk of overdiagnosis.

The USPSTF recommendations rely heavily on data from 2 trials: the European Randomized Study of Screening for Prostate Cancer (ERSPC)[14] and the Prostate, Lung, Colorectal, and Ovarian Screening (PLCO) trial.[15]

The ERSPC[14] demonstrated that screening for prostate cancer reduced deaths from prostate cancer by 20%, with an absolute risk difference of 0.71 deaths per 1,000 men; 1,410 men would need to be screened and 48 additional cases of prostate cancer would need to be treated to prevent 1 death from prostate cancer. Screening also decreased the risk of developing metastatic disease by 30%.[16] On the negative side, screening increased the risk of overdiagnosis and other harms such as bleeding, sepsis, and incontinence.

The PLCO trial,[15] in contrast, found no difference in death rates between men randomly assigned to annual screening and those assigned to usual care. Differences between the trial results were thought to be due to different practice settings as well as study implementation and compliance.

Tsodikov et al[17] reanalyzed data from the ERSPC and the PLCO trial using 3 different mathematical models to estimate the effects of screening in both trials compared with no screening. The analysis found no evidence that the effects of screening vs not screening differed between the 2 trials, ultimately concluding that PSA screening reduced prostate cancer deaths by 25% to 32%, which the authors inferred was primarily a result of earlier detection of cancer.

The Cluster Randomized Trial of PSA Testing for Prostate Cancer,[18] published in March 2018, explored the effect of single PSA screening vs no screening on prostate cancer mortality rates in 419,582 men ages 50 through 69. Although screening detected more cases of low-risk prostate cancer, there was no significant difference in prostate cancer mortality rates after a median follow-up of 10 years. However, 10% to 15% of the control group was estimated to have also been screened, and these results do not directly speak to the efficacy of serial PSA screening.

Extended follow-up of this trial is planned to report on long-term survival benefits and whether screening lowers the risk of metastasis.

Imaging-guided prostate biopsy

Once a patient is found to have an elevated PSA level, standard practice has been to perform transrectal ultrasonography to obtain 12 core biopsy samples. The results indicate whether the prostate contains cancer, how aggressive the cancer is (Gleason score), and whether there is extracapsular extension.

In the past, magnetic resonance imaging (MRI) of the prostate before biopsy was thought to be too costly, and many insurance plans do not currently cover it.

Consider stopping the alpha-blocker from the BPH combination regimen if symptoms are well controlled at 1 year

Pahwa et al,[19] however, in a cost-effectiveness study using a decision-analysis model, found that using MRI to detect lesions and then guide biopsy by triaging patients into proper treatment pathways added health benefits in a cost-effective manner in 94.05% of simulations. These benefits were found across all age groups.

This study demonstrated that doctors could use MRI to better evaluate patients for potentially harmful lesions. If a focus of cancer is found, it can be biopsied; if no cancer is seen on MRI, the patient can avoid biopsy completely. Additionally, though MRI tended to miss low-risk cancers, these cancers are thought to disproportionately lead to higher healthcare costs through unnecessary treatment. Therefore, a negative MRI study was believed to be an excellent sign that the patient does not have aggressive prostate cancer. This approach led to a net gain of 0.251 additional quality-adjusted life years compared with the standard biopsy strategy.

The Prostate MRI Imaging Study[20] also found MRI to be effective in the prostate cancer workup. In this trial, 576 men who had never undergone biopsy underwent multiparametric MRI, transrectal ultrasonography-guided biopsy, and the reference standard, ie, transperineal template prostate mapping biopsy. Of those who underwent biopsy, 71% received a diagnosis of prostate cancer, and 40% had clinically significant disease. In patients with clinically significant disease, MRI was more sensitive than ultrasonography-guided biopsy (93% vs 48%, $P < .0001$) but less specific (41% vs 96%, $P < .0001$).

1,410 men need to be screened to prevent 1 death from prostate cancer

Based on these findings, if biopsy were performed only in those who had suspicious lesions on MRI, 27% of men with elevated PSA could avoid biopsy and its potential complications such as bleeding and sepsis, which occurred in 5.9% of the biopsy group.

The Prostate Evaluation for Clinically Important Disease: Sampling Using Image Guidance or Not? trial[21] more recently studied MRI with or without targeted biopsy vs standard transrectal ultrasonography-guided biopsy in 500 men who had not undergone biopsy before, and reported similar results. MRI with or without biopsy led to fewer biopsies and less overdetection of clinically insignificant prostate cancers compared with the standard approach. Furthermore, those in the MRI-targeted biopsy group were 13% less likely to receive a diagnosis of clinically insignificant cancer than those who received the standard biopsy (adjusted difference −13 percentage points, 95% confidence interval [CI] −19 to −7, $P < .001$).

Together, these data provide another argument for adding multiparametric MRI to the workup of men with an elevated PSA level.

Surveillance vs treatment for prostate cancer

Once prostate cancer is diagnosed, surveillance is becoming an increasingly common management strategy.

The Prostate Cancer Intervention Versus Observation Trial (PIVOT),[22] one of the largest and longest trials involving cancer patients, offered further evidence that active surveillance and less intervention for men with prostate cancer is a better approach in many cases. This trial compared prostatectomy and observation alone in a randomized fashion. Inclusion for the study required men to be medically fit for radical prostatectomy, along with having histologically confirmed localized prostate cancer (stage T1-T2NxM0 in the tumor-node-metastasis classification system) of any grade diagnosed within the last 12 months.

During 19.5 years of follow-up, 223 (61.3%) of the 364 men randomly assigned to radical prostatectomy died, compared with 245 (66.8%) of 367 men in the observation group; the difference was not statistically different ($P = .06$). Only 9.4% of the deaths were due to prostate cancer, 7.4% in the surgery group and 11.4% in the observation group ($P = .06$).

Surgery was associated with a lower all-cause mortality rate than observation in the subgroup of patients with intermediate-risk prostate cancer (defined as PSA 10–20 ng/mL and a Gleason score of 7). Surgery was also associated with less disease progression.[22]

This finding is in line with previous data from the **Scandinavian Prostate Cancer Group Study Number 4,**[23] as well as the much larger **Prostate Testing for Cancer and Treatment (ProtecT) trial,**[24] both of which

reported that metastasis was 1.5 and 2.6 times as common, respectively, in participants in the active surveillance groups. However, in the PIVOT trial, those in the surgery group were significantly more likely than those in the observation group to have erectile dysfunction and urinary incontinence at 10 years.

Therefore, in men with localized disease and in those with low-risk PSA levels, both the PIVOT and ProtecT trials suggest that death from prostate cancer is uncommon and that observation may be more appropriate.

Prostate cancer: Take-home points

- A new look at 2 large trials of PSA screening strengthened evidence that testing in the right patient population can reduce deaths from prostate cancer, but a third recently published trial that found no benefit from 1-time screening may reopen debate on the topic.
- MRI offers a better method than ultrasonography-guided biopsy to triage patients thought to be at high risk of prostate cancer and tends to limit costly overtreatment of disease that likely would not cause death.
- Surgery for prostate cancer may not prolong life but could reduce disease progression, at the risk of more adverse effects.
- Shared decision-making should be practiced when deciding whether to use active surveillance or active treatment of diagnosed prostate cancer.

MANAGEMENT OF ERECTILE DYSFUNCTION

A 62-year-old man with hypertension, hyperlipidemia, peripheral artery disease, and type 2 diabetes presents for a 6-month follow-up. His medications include aspirin, metformin, lisinopril, and atorvastatin, all of which he takes without problems. Over the past several months, he has noticed that his erections are not adequate for sexual intercourse. He recently heard that a generic version of sildenafil has just become available, and he wonders if it might benefit him.

Erectile dysfunction is common, associated with chronic diseases

Erectile dysfunction, ie, persistent inability to obtain and maintain an erection sufficient to permit satisfactory sexual intercourse,[25,26] is estimated to affect nearly 20% of men over the age of 20 and 75% of men over the age of 75.[27]

In age-adjusted models, erectile dysfunction has been shown[28] to be associated with:

- History of cardiovascular disease (odds ratio [OR] 1.63, 95% CI 1.02–2.63)
- Diabetes (OR 3.90, 95% CI 2.16–7.04)
- Treated hypertension vs no hypertension (OR 2.22, 95% CI 1.30–3.80)
- Current smoking vs never smoking (OR 1.63, 95% CI 1.01–2.62)
- BMI greater than 30 kg/m^2 vs less than 25 kg/m^2 (OR 1.80, 95% CI 1.03–3.14).

Because of the strong association between cardiovascular disease and erectile dysfunction, the presence of one often suggests the need to screen for the other.[29] While tools such as the International Index of Erectile Function (IIEF-5) have been developed to evaluate erectile dysfunction, it is most often diagnosed on the basis of clinical impression, while validated assessment methods are reserved for clinical trials.[28]

Multiple causes of erectile dysfunction

Erectile dysfunction arises from inadequate penile tissue response to a sexual signal. The response can be disrupted at several points. For example, damage to vascular smooth muscle cells (eg, from age or obesity) and endothelial cells (from smoking or diabetes) and narrowing of the vascular lumen (from atherosclerosis or hypertension) have all been shown to impair engorgement of the corpus cavernosum.[30] In addition, denervation from prostate surgery or spinal trauma and psychogenic causes should be recognized in discussions with patients.

Once prostate cancer is diagnosed, surveillance is becoming an increasingly common management strategy

Drugs for erectile dysfunction

Pharmacologic management of erectile dysfunction includes oral, sublingual, intracavernosal, and intraurethral therapies.[31] Treatment in primary care settings usually includes addressing underlying chronic diseases[32] and prescribing phosphodiesterase-5 inhibitors (sildenafil, tadalafil, vardenafil, and avanafil). These drugs work by increasing local concentrations of cyclic guanosine monophosphate in the corpus cavernosum to induce vasodilation.[33]

While these 4 drugs are still patent-pro-

tected, a manufacturer has been allowed to introduce a generic version of sildenafil into US markets, and a generic version of tadalafil is expected to be available soon.

Sildenafil, tadalafil, and vardenafil have been studied and found to have some degree of effectiveness in erectile dysfunction caused by damage to the penile vasculature, denervation, and spinal cord injury.[34] All drugs of this class have adverse effects including headache, facial flushing, and nasal congestion, but the drugs are generally well tolerated.[35]

Sildenafil and tadalafil improve IIEF-5 scores by a similar margin, raising scores on the erectile domain subsection from approximately 14 of a possible 30 to approximately 24 of 30 in a trial of both drugs.[36] However, multiple crossover studies comparing the 2 drugs have shown that nearly 75% of patients prefer tadalafil to sildenafil,[36,37] perhaps because of tadalafil's longer duration of action.[34]

There is little evidence to suggest that vardenafil is more effective or more often preferred by patients than tadalafil or sidenafil.[34,38] And though data on the newest drug on the market, avanafil, are limited, a meta-analysis concluded that it may be less effective than tadalafil and without significant differences in terms of safety.[39]

Erectile dysfunction may affect 20% of men over age 20, and 75% of men over age 75

Other treatments

Lifestyle modifications, especially smoking cessation and exercise, have been shown to reduce the risk of erectile dysfunction with varying effect sizes across studies.[40–42] Moreover, factors such as obesity, alcohol use, and smoking may cause irreversible harm, and thus a healthy lifestyle should be encouraged.[41]

While there is only weak evidence for the use of psychological interventions alone for treating most types of erectile dysfunction, one meta-analysis found that the combination of psychological intervention and a phosphodiesterase-5 inhibitor improved sexual satisfaction more than drug therapy alone.[43]

Erectile dysfunction: Take-home points

- Erectile dysfunction is common, affecting nearly 20% of men over the age of 20 and over 75% of men over the age of 75.
- Erectile dysfunction is often associated with chronic disease and may suggest the need to screen for cardiovascular disease.
- Treating underlying chronic diseases may help, and phosphodiesterase-5 inhibitors are effective; tadalafil may be most often preferred.

SUPPLEMENT USE AND MEN'S HEALTH

A 68-year-old man with a history of hypertension, BPH, and erectile dysfunction presents for a 6-month follow-up. His medication use includes lisinopril, which he takes without problems. He denies any new physical symptoms. His physical examination is unremarkable. He says he has heard about supplements that might help with his sexual performance and hopes to discuss recommendations during the visit.

A burgeoning, unregulated industry

Since the passage of the Dietary Supplement and Health Education Act in 1994, a law that decreased oversight of the supplement industry, spending on supplements has skyrocketed to over $41.1 billion each year.[44] Advertisements for these products typically claim that they improve general mental and physical health, sexual and romantic performance, leanness, and muscularity.[45] A national survey of men ages 57 and older reported that the most popular products were aimed at nutrition (such as multivitamins), cardiovascular health (such as omega-3 fatty acids), and chronic conditions (such as saw palmetto for BPH).[46]

Little evidence of efficacy

There is little evidence to support the use of most supplements to improve men's health. For example, a study in 82,405 men found no association between mortality rates and multivitamin use (hazard ratio [HR] 1.07, 95% CI 0.96–1.19).[47] Even for specific uses, such as cognitive performance, randomized trials exploring the effects of multivitamins in men have been largely negative.[48]

The positive trials that have been reported are often of low quality and are funded by supplement manufacturers. For example, one of the few trials that reported a positive association between multivitamin supplementation and cognition in men was underpowered (N = 51) and found improvement in only 1 of 19 cognitive domains.[49] Despite the poor design and results to the contrary, this industry-funded study nevertheless concluded that multivi-

tamins may play a role in improving elements of memory.

Evidence of possible harm from antioxidants

While not always specific to men, many meta-analyses have explored the effects of antioxidant supplements on cardiovascular and mortality risk. Most of them concluded that antioxidant supplements have no benefit and that some may actually be harmful.

For example, multiple meta-analyses of vitamin E supplementation found no cardiovascular benefit but possible increases in all-cause mortality rates in those taking high doses (risk ratio 1.04, 95% CI 1.01–1.07).[50,51]

Another meta-analysis of 180,938 participants in high-quality studies found an increased risk of all-cause mortality associated with independent intake of several antioxidant vitamins, including beta-carotene (risk ratio 1.07, 95% CI 1.02–1.11) and vitamin A (risk ratio 1.16, 95% CI 1.10–1.24), while intake of vitamin C and selenium had no impact on mortality.[52]

Similarly, although nearly 10% of US adults report taking omega-3 fatty acid supplements, a review of 24 randomized controlled trials and meta-analyses published between 2005 and 2012 concluded that only 2 supported the use of these supplements for any health benefit.[53]

Can supplements improve sexual function, prostate health?

To improve sexual function. A 2015 narrative review of the ingredients in General Nutrition Center's top 30 best-selling products targeted at improving men's sexual performance (including improving libido and erectile dysfunction) found only poor evidence for any efficacy.[54] The few studies that did support the use of select supplements, including B vitamins in people with diabetes, L-arginine, and yohimbine, were deemed to be of poor quality or showed a smaller effect size compared with standard medical therapy.

To prevent prostate cancer. Studies of supplement use to improve prostate health have had mixed results. For example, multiple large case-control studies have suggested that taking vitamin D[55,56] or vitamin C[57] is not associated with prostate cancer risk, while increased vitamin A[58,59] and E[60,61] intake is associated with inconsistent increases in prostate cancer risk.

In the Selenium and Vitamin E Cancer Prevention Trial,[62] a randomized controlled trial in 35,533 men, those assigned to receive vitamin E supplementation were 17% more likely to get prostate cancer than were those assigned to placebo (HR 1.17, 99% CI 1.004–1.36, $P = .008$).

However, there are plausible biologic links between nutraceuticals and prostate cancer. For example, studies have linked genetic polymorphisms in vitamin D receptors[63] as well as intake of natural androgen receptor modulators, such as the most active polyphenol in green tea,[64] to prostate cancer risk and aggressiveness in certain populations. This led a recent review to conclude that there is some biologic plausibility, but at present little epidemiologic evidence, to support any dietary supplement's ability to broadly affect prostate cancer risk.[65]

Interest continues in exploring the targeted use of nutraceuticals as adjuvant therapy in specific populations at risk of prostate cancer.[66,67]

To treat BPH. There is a similar dearth of clinical or population-based evidence that supplements can broadly affect BPH symptoms. For example, in a 2012 Cochrane review of *Serenoa repens* (saw palmetto) utilizing only high-quality evidence, there was no evidence that supplement use significantly reduced lower urinary tract symptoms, nocturia, or peak urine flow in BPH patients, and this was true even when the supplement was taken at triple-strength doses.[68]

For other diseases. There is also limited evidence that supplements can affect other chronic diseases. For example, a meta-analysis of 3,803 patients found that glucosamine, chondroitin, and their combination had no impact on joint pain or joint space narrowing in patients with osteoarthritis of the knee or hip.[69]

Even when there is some evidence to suggest benefit from supplementation, study heterogeneity and varying evidence quality limit confidence in the conclusions. For example, meta-analyses suggest garlic may improve blood pressure control in those with hyper-

There is little evidence to support the use of most supplements to improve men's health

tension[70] and improve lipid and blood glucose control in type 2 diabetes.[71] However, most of the trials included in those systematic reviews were underpowered, with samples as low as 10 patients, and many suffered from improper design, such as inadequate blinding of researchers. In addition, these meta-analyses often do not report adverse events, suggesting that higher quality studies would be needed to adequately measure event rates. As such, there is need for caution and a case-by-case review before recommending even a seemingly benign supplement like garlic to patients.

In total, there is only limited evidence to support the efficacy of supplements across many diseases and concerns common to men in primary care. This includes improving general health, cardiovascular health, sexual functioning, or other chronic diseases. While a supplement's placebo effect may at times provide some benefit, supplements are much less strictly regulated since the passing of the 1994 act, and even vitamin supplementation has been shown to be associated with negative health outcomes. As such, a patient's use of supplements requires careful consideration and shared decision-making.

Supplements: Take-home points

- Supplements are only loosely regulated by the federal government.
- There is some biologic but limited epidemiologic evidence for the use of multivitamins to improve cognition or mortality rates; for the use of antioxidant vitamins or omega-3 fatty acids to improve cardiovascular health; for the use of any of the top-selling sexual enhancement supplements to improve libido or erectile function; and for the use of vitamins or other supplements for improving BPH or reducing prostate cancer risk. Using supplements may in some cases be harmful.
- Given the heterogeneity of studies of supplements to manage chronic diseases and a lack of reporting of adverse events, careful consideration is needed when recommending supplements to patients.

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CORRECTION

Men's health 2018

NOVEMBER 2018

In the article by Chaitoff et al (Men's health 2018: BPH, prostate cancer, erectile dysfunction, supplements. Cleve Clin J Med 2018; 85(11):871–880, doi:10.3949/ccjm.85a.18011), the prostate-specific antigen level of a 60-year-old man was given as 5.1 mg/dL. The unit of measure should have been 5.1 ng/mL. This has been corrected online.