Appendix Table 1. Unadjusted Characteristics of Men Who Had Routine PSA Testing in the Past Year

	2005		2008		2010		2013		2015	
Characteristic	**n**	**%, 95% CI**	**N**	**%, 95% CI**	**n**	**%, 95% CI**	**n**	**%, 95% CI**	**n**	**%, 95% CI**
Age group, years										
40–44	1,257	8.0 (6.4–9.8)	850	11.1 (8.7–14.1)	995	7.5 (5.8–9.6)	1,310	5.1 (3.8–6.8)	1,076	6.2 (4.4–8.5)
45–49	1,226	11.9 (10.0–14.0)	819	15.1 (12.4–18.2)	973	11.0 (8.8–13.7)	1,209	11.3 (9.1–14.0)	1,079	10.2 (7.7–13.4)
50–54	1,094	24.4 (21.5–27.6)	801	27.2 (23.8–30.9)	950	24.2 (21.0–27.7)	1,324	16.9 (14.5–19.7)	1,207	20.3 (17.2–23.9)
55–59	983	33.1 (29.7–36.6)	750	36.7 (32.4–41.2)	843	30.0 (26.7–33.6)	1,274	24.1 (21.1–27.3)	1,160	26.0 (22.5–29.7)
60–64	754	41.9 (38.0–45.8)	558	46.4 (41.5–51.5)	759	46.6 (42.1–51.1)	1,065	35.1 (31.4–39.0)	1,062	37.2 (33.2–41.3)
65–69	552	47.9 (43.0–52.8)	499	49.7 (44.5–54.9)	599	49.8 (45.1–54.6)	921	43.2 (38.9–47.6)	993	41.1 (36.9–45.4)
70–74	471	50.0 (45.1–55.0)	292	53.5 (46.7–60.2)	389	49.8 (43.7–55.9)	637	46.7 (41.6–51.8)	706	40.2 (35.5–45.2)
≥75	726	42.9 (39.0–46.8)	576	49.8 (44.9–54.7)	617	43.1 (38.5–47.8)	951	36.2 (32.2–40.4	1,019	33.5 (29.7–37.5)
Race[a]										
Total	7,041	28.6 (27.5–29.9)	5,127	32.1 (30.6–33.7)	6,108	28.9 (27.6–30.2)	8,652	23.7 (22.7–24.9)	8261	23.9 (22.7–25.3)
White	5,924	29.1 (27.8–30.5)	4,107	32.9 (31.2–34.6)	4,727	29.6 (28.2–31.0)	6,851	24.2 (23.0–25.4)	6672	24.8 (23.4–26.3)
Black	855	25.7 (22.2–29.1)	719	30.3 (26.4–34.5)	970	24.5 (21.6–27.8)	1,215	23.6 (20.6–26.8)	1,022	22.4 (19.6–25.6)
AIAN	51	28.2 (14.5–47.8)	52	10.3 (5.2–19.6)[b]	46	24.2 (13.1–40.4)	107	13.0 (6.0–25.7)[b]	104	22.7 (13.3–36.2)
Asian	211	21.7 (15.5–29.5)	249	2.8 (18.3–29.2)	365	24.3 (18.5–31.3)	470	17.5 (13.2–23.0)	463	12.0 (8.8–16.2)
Education										
Total	7,010	28.7 (27.5–29.9)	5,111	32.3 (30.8–33.8)	6,100	29.0 (27.7–30.3)	8,656	23.7 (22.6–24.8)	8,264	24.0 (22.8–25.4)
<HS graduate	1,258	18.1 (15.6–20.9)	893	19.8 (16.9–22.9)	1,111	16.2 (13.9–18.8)	1,496	14.2 (12.0–16.8)	1,234	13.3 (10.6–16.6)
HS	2,054	25.0 (23.1–27.1)	1,440	26.4 (24.1–28.7)	1,673	23.4 (21.1–25.9)	2,271	19.3 (17.4–21.4)	2,185	20.6 (18.4–23.0)
Some college	1,731	30.8 (28.3–33.5)	1,359	35.3 (32.4–38.3)	1,564	30.5 (27.9–33.1)	2,329	25.2 (23.1–27.4)	2,306	23.4 (21.1–25.8)
College graduate	1,967	36.9 (34.7–39.1)	1,419	42.3 (39.4–45.2)	1,752	38.7 (36.3–41.2)	2,560	30.2 (28.1–32.3)	2,539	31.7 (29.3–34.2)

Notes: Questions about PSA testing were not included in NHIS survey years 2006, 2007, 2009, 2011, 2012, and 2014. Percentages are estimates of the study population in each survey year.
[a]Race includes Hispanic.
[b]Interpret with caution. Relative SE >0.3.

AIAN, American Indian/Alaska Native; PSA, prostate specific antigen; NHIS, National Health Interview Survey, HS, high school; Some college, some college or technical school.

Appendix Table 2. Prostate Specific Antigen Screening Recommendations by the U.S. Preventive Service Task Force

Time period	Average risk men	Shared decision	Men at increased risk (African American; or first degree relative with prostate cancer)	PSA screening intervals
1989–1995[4]	Recommends against routine PSA screening in asymptomatic men. Prospective studies are needed.	Not addressed.	Not addressed.	Not addressed.
1996–2001[5]	Recommends against routine screening (Grade D). Limit screening to men with life expectancy >10 years.	Patients who request screening should be given objective information about benefits and harms.	Not addressed.	Evidence is insufficient to determine optimal interval for repeat screening.
2002–2007[6]	Insufficient evidence (Statement I). Average risk men aged 50–70 years are most likely to benefit.	Discuss PSA test with patient before order, and consider the personal preferences of the patient.	Most likely to benefit are men >45 years at increased risk (African American men and men with first-degree relative who has prostate cancer).	Screening every 2 years could yield as much benefit as annual.
2008–2011[7]	Insufficient evidence (Statement I). Recommends against screening men aged ≥70 years (Grade D).	Discuss PSA test with patient before order, and consider the personal preferences of the patient.	Gaps exist in evidence about benefits of screening for higher risk men.	Screening every 4 years could yield as much of a benefit as annual.
2012–2017[8]	Recommends against PSA screening in men of all ages (Grade D).	Men requesting PSA screening should be provided opportunity to make informed choice.	No evidence of more favorable balance of benefits and risks.	Screening every 2–4 years may reduce harms without affecting cancer mortality.
Draft April 2017[2]	Recommends shared decision discussion for men aged 55–69 years (Grade C). Recommends against screening men aged ≥70 years (Grade D).	Inform men about the potential benefits and harms of screening, with individualized decision making.	Not able to make a specific separate recommendation.	Screening every 2 or 4 years provides good tradeoff between over diagnosis and mortality benefit.

Notes: Grade C: USPSTF recommends selectively providing service to selected patients based on professional judgement and patient preferences. Grade D: USPSTF recommends against the service. Statement I prior to May 2007: USPSTF concludes evidence is insufficient to recommend for or against routinely providing the service. Statement I after May 2007: USPSTF concludes evidence is insufficient to assess the balance of benefits and harms.

USPSTF, U.S. Preventive Service Task Force; PSA, prostate specific antigen

Appendix Table 3. Prostate Specific Antigen Screening Recommendations by Other Organizations

Organization	Year	Average risk men	Shared decision	Men at increased risk (African American; or first degree relative with prostate cancer).	PSA screening intervals
American Academy Family Physicians[9]	2017	Recommends against PSA screening in men of all ages.	Follows 2012 U.S. Preventive Services Task Force.	Follows 2012 U.S. Preventive Service Task Force.	Not applicable.
American Cancer Society[10]	2017	Ages ≥50 years, where life expectancy ≥10 years. Updated recommendation expected in 2017–2018.	Screening should not occur without informed decision making. Provide men with an opportunity for informed decision making.	Start screening discussion at age 45 years (age 40 years if >1 high risk relative).	If PSA <2.5 ng/mL: screen every 2 years. If PSA ≥2.5 ng/mL, screen every year. If PSA 2.5 to 4.0 ng/mL, individualize risk assessment. If PSA >4.0 ng/ml, refer for further evaluation or biopsy.
American College of Physicians[11]	2013	Ages 50 to 69 years.	Inform men about limited potential benefits and substantial harms. Base decision on the risk, discussion of the benefits and harms, patient's general health and life expectancy, and patient preferences.	Discuss screening at earlier age in men who are at increased risk for prostate cancer.	No clear evidence for decision. PSA ≥2.5 µg/L may warrant annual screen.
American College Preventive Medicine[12]	2008	Insufficient evidence to recommend routine population screening.	Provide information about potential benefits, risks, and limitations, to maximize informed decision making.	Especially provide information and maximize informed decision making in men at increased risk.	Discussion should occur annually, during routine periodic exam, or in response to request from patient.
Medicare[13]	2017	All men aged ≥50 years covered by Medicare Part B.	Not addressed.	Not addressed.	Once every 12 months.
National Comprehensive Cancer Network[14]	2017	Ages 45 to 75 years; if age >75 years, only screen very healthy men.	Discuss the benefits and risks of prostate cancer screening. Offer PSA testing to men willing to be screened.	High level vigilance when analyze screening results.	Follow-up test interval ranges from 1 to 4 years, depending on PSA results.
National Committee for Quality Assurance[15]	2016	HEDIS: Do not screen men aged ≥70 years	Not addressed.	Not addressed.	Not addressed.

American Urological Association[1]	2013	Ages 55 to 69 years	Recommends shared decision making. Screen based on a man's values and preferences.	Individualize decisions for higher risk men aged 40 to 54 years.	Screening interval of $\geq$2 years may be preferred over annual screening. Individualize intervals based on baseline PSA level.
Veterans Health Administion[16]	2015	Ages 45 to 70 years	Talk with your provider.	Follow same rules as for average risk men.	Not addressed.

PSA, prostate specific antigen; HEDIS, Healthcare Effectiveness Data and Information Set