CA
A Cancer Journal for Clinicians

ONLINE CONTINUING EDUCATION ACTIVITY

Take free quizzes online at **acsjournals.com/ce**

ARTICLE TITLE: American Cancer Society Prostate Cancer Survivorship Care Guidelines

CME CNE

CONTINUING MEDICAL EDUCATION ACCREDITATION AND DESIGNATION STATEMENT:

Blackwell Futura Media Services is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education (CME) for physicians.

Blackwell Futura Media Services designates this journal-based CME for a maximum of 1 *AMA PRA Category 1 Credit*™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

CONTINUING NURSING EDUCATION ACCREDITATION AND DESIGNATION STATEMENT:

The American Cancer Society (ACS) is accredited as a provider of continuing nursing education (CNE) by the American Nurses Credentialing Center's Commission on Accreditation.

Accredited status does not imply endorsement by the ACS or the American Nurses Credentialing Center of any commercial products displayed or discussed in conjunction with an educational activity. The ACS gratefully acknowledges the sponsorship provided by Wiley for hosting these CNE activities.

EDUCATIONAL OBJECTIVES:

After reading the article "American Cancer Society Prostate Cancer Survivorship Care Guidelines," the learner should be able to:

1. Identify and manage the side effects and complications of prostate cancer that are commonly addressed by primary care clinicians.
2. Discuss monitoring and screening tests recommended for survivors of prostate cancer.

ACTIVITY DISCLOSURES

This journal article was supported in part by Cooperative Agreement #5U55DP003054 from the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

ACS CONTINUING PROFESSIONAL EDUCATION COMMITTEE DISCLOSURES

Editor, Director of Continuing Professional Education, and ACS Director of Medical Content

Ted Gansler, MD, MBA, MPH, has no financial relationships or interests to disclose.

Deputy Editor and ACS Director of Prostate and Colorectal Cancers

Durado D. Brooks, MD, MPH, has no financial relationships or interests to disclose.

Lead Nurse Planner and Associate Editor

Marcia Grant, RN, PhD, FAAN, has no financial relationships or interests to disclose.

American Academy of Family Physicians representative and Associate Editor

Richard C. Wender, MD, has no financial relationships or interests to disclose.

AUTHOR DISCLOSURES

Dr. Skolarus is supported by VA HSR&D Career Development Award – 2 (CDA 12-171) for work outside of the current study and has acted as a paid consultant for ArborMetrix Inc, to support a prostate cancer-related grant submission in 2013 outside of the current study. Ms. Erb reports cooperative agreement funding from the American Cancer Society/Centers for Disease Control and Prevention for the National Cancer Survivorship Resource Center project, from which her salary is paid. Dr. Zelefsky is Editor-in-Chief of Brachytherapy, for which he receives an annual honorarium. He has also acted as a paid consultant for Mick RadioNuclear for work performed outside of the current study. Dr. Aragon-Ching reports personal fees from Amgen as a member of the Advisory Board for Denosumab (metastatic indication) and fees from Sanofi-Aventis, Janssen, and Astellas/Medivation as part of their Speakers Bureaus, for work performed outside of the current study. Dr. Wittmann owns Pfizer stock. Dr. Chodak reports being a paid speaker for Actavis Pharmaceuticals and Astellas Pharmaceuticals for work performed outside of the current study. Ms. Pratt-Chapman is the Director of a sub-grant that the American Cancer Society provides to the George Washington Cancer Institute and reports cooperative agreement funding from the American Cancer Society/Centers for Disease Control and Prevention during the conduct of the current study as well as grants from Pfizer Inc/Pfizer FoundationGlobal Health Partnerships Program for work performed outside of the current study. Ms. Cowens-Alvarado reports cooperative agreement funding from the American Cancer Society/Centers for Disease Control and Prevention for the National Cancer Survivorship Resource Center project in which she serves as Principal Investigator; however, her salary is solely funded through American Cancer Society funds. Drs. Hoyt, Brooks, Rivers, Salner, Slovin, Underwood, Wolf and Ms. Sinibaldi have nothing to disclose.

SCORING

A score of 70% or better is needed to pass a quiz containing 10 questions (7 correct answers), or 80% or better for 5 questions (4 correct answers).

CME INSTRUCTIONS ON RECEIVING CME CREDIT

This activity is intended for physicians. For information concerning the applicability and acceptance of CME credit for this activity, please consult your professional licensing board.

This activity is designed to be completed within 1 hour; physicians should claim only those credits that reflect the time actually spent in the activity. To successfully earn credit, participants must complete the activity during the valid credit period, which is up to 2 years from the time of initial publication.

CNE INSTRUCTIONS ON RECEIVING CNE CREDIT

This activity is intended for nurses. For information concerning the applicability and acceptance of continuing education credit for this activity, please consult your professional licensing board.

This activity is designed to be completed within 1.5 hours; nurses should claim only those credits that reflect the time actually spent in the activity. To successfully earn credit, participants must complete the activity during the valid credit period, which is up to 2 years from the time of initial publication.

FOLLOW THESE STEPS TO EARN CREDIT

- Log on to acsjournals.com/ce.
- Read the target audience, educational objectives, and activity disclosures.
- Read the activity contents in print or online format.
- Reflect on the activity contents.
- Access the examination, and choose the best answer to each question.
- Complete the required evaluation component of the activity.
- Claim your certificate.

This activity will be available for CME/CNE credit for 1 year following its launch date. At that time, it will be reviewed and potentially updated and extended for an additional 12 months.

All CME/CNE quizzes are offered online **FREE OF CHARGE**. Please log in at acsjournals.com/ce. New users can register for a FREE account. Registration will allow you to track your past and ongoing activities. After successfully completing each quiz, you may instantly print a certificate, and your online record of completed courses will be updated automatically.

American Cancer Society Prostate Cancer Survivorship Care Guidelines

Ted A. Skolarus, MD, MPH[1]; Andrew M.D. Wolf, MD[2]; Nicole L. Erb, BA[3]*; Durado D. Brooks, MD, MPH[4]; Brian M. Rivers, PhD, MPH[5]; Willie Underwood III, MD, MPH, MSci[6]; Andrew L. Salner, MD[7]; Michael J. Zelefsky, MD[8]; Jeanny B. Aragon-Ching, MD[9]; Susan F. Slovin, MD, PhD[10]; Daniela A. Wittmann, PhD, MSW, CST[11]; Michael A. Hoyt, PhD[12]; Victoria J. Sinibaldi, CRNP[13]; Gerald Chodak, MD[14]; Mandi L. Pratt-Chapman, MA[15]; Rebecca L. Cowens-Alvarado, MPH[16]

Prostate cancer survivors approach 2.8 million in number and represent 1 in 5 of all cancer survivors in the United States. While guidelines exist for timely treatment and surveillance for recurrent disease, there is limited availability of guidelines that facilitate the provision of posttreatment clinical follow-up care to address the myriad of long-term and late effects that survivors may face. Based on recommendations set forth by a National Cancer Survivorship Resource Center expert panel, the American Cancer Society developed clinical follow-up care guidelines to facilitate the provision of posttreatment care by primary care clinicians. These guidelines were developed using a combined approach of evidence synthesis and expert consensus. Existing guidelines for health promotion, surveillance, and screening for second primary cancers were referenced when available. To promote comprehensive follow-up care and optimal health and quality of life for the posttreatment survivor, the guidelines address health promotion, surveillance for prostate cancer recurrence, screening for second primary cancers, long-term and late effects assessment and management, psychosocial issues, and care coordination among the oncology team, primary care clinicians, and nononcology specialists. A key challenge to the development of these guidelines was the limited availability of published evidence for management of prostate cancer survivors after treatment. Much of the evidence relies on studies with small sample sizes and retrospective analyses of facility-specific and population databases. **CA Cancer J Clin 2014;64:225-249.**

Keywords: prostate cancer, survivorship, clinical care, follow-up, guidelines, primary care, quality of life, survivorship care plan, long-term effects, late effects, care coordination

To earn free CME credit or nursing contact hours for successfully completing the online quiz based on this article, go to **acsjournals.com/ce.**

Introduction

Prostate cancer survivors approach 2.8 million in number and represent 1 in 5 of all cancer survivors and over 4 in 10 male cancer survivors in the United States.[1] Given that long-term survival is common after prostate cancer treatment, distinctly characterizing cancer survivorship (the phase of care after active treatment) and addressing survivors' unique needs are critical to quality cancer care.[2] Nearly a decade ago, a landmark report from the Institute of Medicine entitled *From Cancer Patient to Cancer Survivor: Lost in Transition* highlighted the unique issues facing all cancer survivors as well as the growing need for guidance with respect to quality survivorship care.[3] With nearly 14 million cancer survivors,[1] this report is relevant to these survivors, their caregivers and advocates, primary and specialty care clinicians, insurers, employers, funding agencies, and policy makers. In recognition of the increasing need for information resources to support primary care clinicians who care for prostate cancer survivors, these guidelines were developed in response to the National Cancer Survivorship Resource

Additional Supporting Information may be found in the online version of this article.

[1]Assistant Professor of Urology, Department of Urology, University of Michigan, Research Investigator, HSR&D Center for Clinical Management Research, VA Ann Arbor Healthcare System, Ann Arbor, MI; [2]Associate Professor of Medicine, University of Virginia Health Systems, Charlottesville, VA; [3]Program Manager, National Cancer Survivorship Resource Center, American Cancer Society, Atlanta, GA; [4]Director, Prostate and Colorectal Cancers, American Cancer Society, Atlanta, GA; [5]Assistant Member Faculty Research, Department of Health Outcomes and Behavior, Moffitt Cancer Center, Tampa, FL; [6]Associate Professor, Department of Urology, Roswell Park Cancer Institute, Buffalo, NY; [7]Director, Helen and Harry Gray Cancer Center and Chief, Department of Radiation Oncology, Hartford Hospital, Hartford, CT; [8]Professor of Radiation Oncology, Chief, Brachytherapy Service, Memorial Sloan-Kettering Cancer Center, New York, NY; [9]Assistant Professor of Medicine, Division of Hematology and Oncology, George Washington University Medical Center, Washington, DC; [10]Attending Physician, Genitourinary Oncology Service, Sidney Kimmel Center for Prostate and Urologic Cancer, Memorial Sloan-Kettering Cancer Center, New York, NY; [11]Assistant Professor of Urology, Adjunct Assistant Professor of Social Work, University of Michigan, Ann Arbor, MI; [12]Clinical Psychologist, Department of Psychology, Hunter College, City University of New York, New York, NY; [13]Research Associate, Faculty, Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, Baltimore, MD; [14]Highland Beach, FL; [15]Director, The GW Cancer Institute, George Washington University, Washington, DC; [16]Director, Cancer Control Mission Strategy, American Cancer Society; PI, National Cancer Survivorship Resource Center, Atlanta, GA

Corresponding author: Nicole L. Erb, BA, National Cancer Survivorship Resource Center, American Cancer Society, 250 Williams St, NW, Suite 600, Atlanta, GA 30303; nicole.erb@cancer.org

Center (The Survivorship Center [cancer.org/survivorshipcenter]) strategic recommendations aimed at enhancing the quality of clinical follow-up care for cancer survivors who have completed initial treatment (eg, surgery, radiation, and/or chemotherapy) and are transitioning back to the routine care typically provided by a primary care clinician.[4] The Survivorship Center is a collaboration between the American Cancer Society (ACS) and The George Washington University Cancer Institute funded through a 5-year cooperative agreement with the Centers for Disease Control and Prevention. The Survivorship Center aims to impact individual, systems, and policy gaps in posttreatment survivorship clinical care and resources to help survivors achieve optimal health and quality of life (QOL) and increase the importance of posttreatment survivorship as a public health issue.[4]

BACKGROUND

Each year, approximately 240,000 men in the United States are diagnosed with prostate cancer and begin their journey into prostate cancer survivorship.[1] Most prostate cancers are diagnosed by prostate-specific antigen (PSA) testing.[1,5-7] The median age at diagnosis is 67 years and over 90% of men are diagnosed with local or regional disease, for which the 5-year relative survival rate approaches 100%.[1] Over the past 25 years, the 5-year relative survival rate (compared with similar individuals without cancer) for all stages combined has increased from 68.3% to 99.9%. The 10-year and 15-year relative survival rates are 97.8% and 91.4%, respectively.[1] These trends in survival have been attributed to a combination of early detection,[2] increasingly effective treatment of localized and advanced disease,[8] lead-time bias (early diagnosis falsely appears to prolong survival), and overdiagnosis (often due to the widespread use of PSA screening).[9] However, trends in survival and QOL outcomes continue to vary across socioeconomic, racial, and ethnic boundaries. Prostate cancer survivors with lower income and less education and from nonwhite populations tend to have poorer QOL and a lower likelihood of survival compared with higher-income, more educated, and white prostate cancer survivors.[10-12]

The treatment of prostate cancer varies based on risk of disease progression, comorbidity, and patient and clinician preferences due, in part, to its preference-sensitive nature.[13-15] The type of treatment provided may also be impacted by age, race, ethnicity, access to oncology services, and socioeconomic status.[16-18] As illustrated in Figure 1,[1] initial treatment patterns indicate that 57% of men aged younger than 65 years are treated with radical prostatectomy and 25% receive radiation therapy.[1] Among those aged 65 to 74 years, 42% undergo radiation therapy and 33% undergo radical prostatectomy.[1] Based on disease severity, some patients may undergo combination treatment with radical prostatectomy followed by radiation therapy or androgen deprivation therapy (ADT) coupled with radiation therapy. Observational data indicate African American men diagnosed with localized/regional prostate cancer are more likely to undergo radiation therapy than surgery. They are also diagnosed with prostate cancer at younger ages and present with more advanced disease.[19,20] The latter is true among both insured and uninsured patients.[10]

DISCLOSURES: Supported in part by Cooperative Agreement #5U55DP003054 from the Centers for Disease Control and Prevention. The contents of this article are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention. Dr. Skolarus is supported by VA HSR&D Career Development Award - 2 (CDA 12-171) for work outside of the current study and has acted as a paid consultant for ArborMetrix, Inc, to support a prostate cancer-related grant submission in 2013 outside of the current study. Ms. Erb reports cooperative agreement funding from the American Cancer Society/Centers for Disease Control and Prevention for the National Cancer Survivorship Resource Center project, from which her salary is paid. Dr. Zelefsky is Editor-in-Chief of *Brachytherapy*, for which he receives an annual honorarium. He has also acted as a paid consultant for Mick RadioNuclear for work performed outside of the current study. Dr. Aragon-Ching reports personal fees from Amgen as a member of the Advisory Board for Denosumab (metastatic indication) and fees from Sanofi-Aventis, Janssen, and Astellas/Medivation as part of their Speakers Bureaus, for work performed outside of the current study. Dr. Wittmann owns Pfizer stock. Dr. Chodak reports being a paid speaker for Actavis Pharmaceuticals and Astellas Pharmaceuticals for work performed outside of the current study. Ms. Pratt-Chapman is the Director of a sub-grant that the American Cancer Society provides to the George Washington Cancer Institute and reports cooperative agreement funding from the American Cancer Society/Centers for Disease Control and Prevention during the conduct of the current study as well as grants from Pfizer Inc/Pfizer Foundation Global Health Partnerships Program for work performed outside of the current study. Ms. Cowens-Alvarado reports cooperative agreement funding from the American Cancer Society/Centers for Disease Control and Prevention for the National Cancer Survivorship Resource Center project in which she serves as Principal Investigator; however, her salary is solely funded through American Cancer Society funds. The remaining authors report no conflicts of interest.

In addition to the authors of the current article, the American Cancer Society would like to thank the following members of the Prostate Cancer Survivorship Care Expert Workgroup for their contribution to the development of the Prostate Cancer Survivorship Care Guidelines: Lisa C. Campbell, PhD (Assistant Professor, Department of Psychology, East Carolina University, Greenville, NC); Paul A. Godley, MD, PhD, MPP (Professor, Division of Hematology/Oncology, University of North Carolina at Chapel Hill, Chapel Hill, NC); Carol Garlinghouse, RN, MSN (Nurse Consultant, Michigan Public Health Institute, Lansing, MI); and Katherine Sharpe, MTS (Vice President, Health Systems, American Cancer Society, Atlanta, GA). The American Cancer Society Prostate Cancer Survivorship Care Expert Workgroup would like to thank the following individuals for their helpful review and comments on this article: Alan B. Astrow, MD (Director, Hematology/Medical Oncology, Maimonides Cancer Center, Brooklyn, NY); Lewis E. Foxhall, MD (Vice President, Health Policy, Ofc/EVP Physician-in-Chief; Professor, Department of Clinical Cancer Prevention, Division of Cancer Prevention and Population Sciences, The University of Texas MD Anderson Cancer Center, Houston, TX); Ted Gansler, MBA, MD, MPH (Director, Medical Content, American Cancer Society, Atlanta, GA); Kevin C. Oeffinger, MD (Member and Attending Director, Adult Long-term Follow-Up Program, Departments of Medicine and Pediatrics, Memorial Sloan-Kettering Cancer Center, New York, NY); Thomas K. Oliver (Director, Guidelines, Quality and Guidelines, American Society of Clinical Oncology, Alexandria, VA); Steven R. Patierno, PhD (Deputy Director, Duke Cancer Institute; Professor of Medicine; Pharmacology and Cancer Biology; and Community and Family Medicine, Duke University Medical Center, Durham, NC); Andrew C. Peterson, MD (Associate Professor of Urologic Surgery, Urology Residency Program Director, Duke University Medical Center, Durham, NC); and Richard Wender, MD (Chief Cancer Control Officer, American Cancer Society, Atlanta, GA).

doi: 10.3322/caac.21234. Available online at cacancerjournal.com

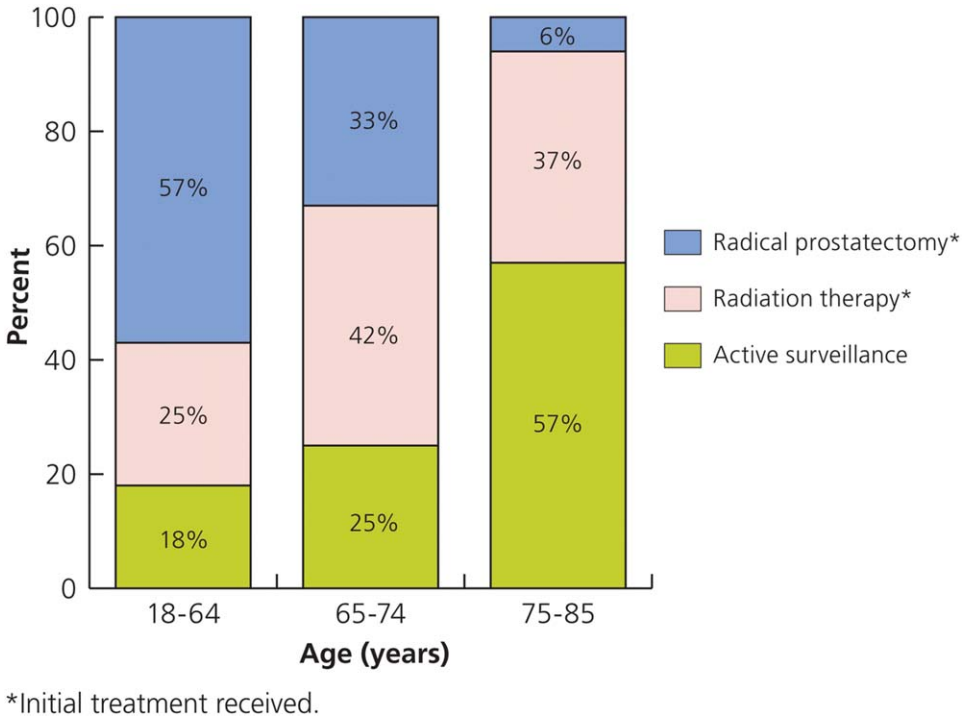

FIGURE 1. Prostate Cancer Primary Treatment Patterns by Age, 2008. Bar graph is shown illustrating initial prostate cancer treatment patterns percentages by age range. Reproduced with permission from Siegel R, DeSantis C, Virgo K, et al. Cancer treatment and survivorship statistics, 2012. *CA Cancer J Clin*. 2012;62:220-241.[1]

Prostate cancer survivors often have comorbid health conditions. For those diagnosed with localized disease between 1999 and 2005, between 2% and 14% died of their cancer depending on their age and comorbidities.[21] The vast majority died of other causes. Expectant management approaches, which include active surveillance (monitoring the cancer closely with PSA, digital rectal examination [DRE], and ultrasound-guided prostate biopsy at regular intervals to determine whether the cancer is growing) and watchful waiting (less intensive follow-up with fewer tests and monitoring the man's symptoms to decide whether treatment is needed),[22] are therefore increasingly used for patients with less aggressive disease biology and/or a shorter life expectancy to avoid or delay treatment and its potential side effects.[23] However, use of these approaches remains relatively uncommon (approximately 34% of patients) despite concerns about prostate cancer overdiagnosis and subsequent overtreatment.[9,24]

Research addressing prostate cancer survivorship is emerging, yet remains sparse despite growing recognition of the long-term implications of a prostate cancer diagnosis.[25] For example, a literature review published in 2011 indicated that fewer than 10 prostate cancer survivorship studies are published each year.[25] Many prostate cancer survivors experience long-term and late effects of the disease and its treatment, including urinary incontinence, sexual dysfunction, bowel issues, and adverse psychosocial and relationship effects (Table 1).[26-30] In addition, practical issues, such as employment, insurance, and finances, may have all been impacted by cancer treatment.[31] Furthermore, these long-term and late effects are often exacerbated by existing comorbidities.[32] Accordingly, treatment-related regret (feelings of loss or distress over a decision made under uncertain conditions) may occur in as much as 20% of patients.[33,34] Treatment-related regret may be influenced by the presence of adverse effects such as urinary and sexual functioning, and be more common after surgery among African American patients.[33,35]

Differential treatment outcomes tend to adversely impact African American prostate cancer survivors with respect to cancer control and general, urinary, and sexual health-related QOL (HRQOL); however, the reasons for these disparities are not completely understood.[36-38] There is also insufficient information regarding outcomes for Hispanic, Native American, Asian, rural, and homosexual men diagnosed with prostate cancer as most published information on treatment outcomes, particularly for HRQOL, is based on the experience of well-educated, married, heterosexual, white men.[12] Further research is needed into how best to care for prostate cancer survivors from different racial and ethnic minority populations as well as men who have sex with men.[38,39]

Despite the growing need, no known comprehensive guidelines exist to direct the care of men surviving prostate cancer. The National Comprehensive Cancer Network (NCCN) has guidelines that address prostate cancer treatment and surveillance for recurrent disease[40] as well as general survivorship guidelines[41] for managing certain late effects (eg, anxiety, fatigue) that affect some prostate cancer survivors.

TABLE 1. Summary of Common Long-Term and Late Effects of Prostate Cancer and Its Treatment

TREATMENT TYPE	LONG-TERM EFFECTS	LATE EFFECTS
Surgery (radical prostatectomy: open, laparoscopic, robotic-assisted)	Urinary dysfunction • Urinary incontinence (stress) • Urinary symptoms (urgency, frequency, nocturia, dribbling) • Urethral stricture formation (scarring at the urethra) Sexual dysfunction • ED • Lack of ejaculation • Orgasm changes (without erection, associated with incontinence) • Penile shortening	Disease progression
Radiation (external beam or brachytherapy)	Urinary dysfunction • Urinary incontinence • Urinary symptoms (dysuria, urgency, frequency, nocturia, dribbling) • Hematuria • Urethral stricture Sexual dysfunction • Progressive ED • Decreased semen volume Bowel dysfunction • Fecal urgency, frequency, incontinence • Blood in stool • Rectal inflammation, pain	Urinary dysfunction • Urethral stricture • Hematuria due to small blood vessel changes Sexual dysfunction • ED can be delayed in onset 6 to 36 mo after therapy Bowel dysfunction • Rectal bleeding secondary to thinning/small blood vessel changes of anterior rectal wall mucosa • Disease progression
Hormone (androgen deprivation therapy)	Sexual dysfunction • Loss of libido • ED Other • Hot flushes/sweats • Weight gain, abdominal obesity • Change in body image • Excessive emotional reactions and frequent mood changes • Depression • Fatigue/decreased activity • Gynecomastia • Anemia • Body hair loss • Dry eyes	• Osteoporosis, fractures • Metabolic syndrome • Cardiovascular disease (possible increased risk of myocardial infarction) • Diabetes; decreased sensitivity to insulin and oral glycemic agents • Increased cholesterol • Increased fat mass and decreased lean muscle mass/muscle wasting • Venous thromboembolism • Vertigo • Cognitive dysfunction • Disease progression
Expectant management (active surveillance or watchful waiting)[a]	• Stress, anxiety, worry • Risks associated with repeat biopsy (active surveillance), PSAs and DREs • Symptoms associated with disease progression	• Disease progression
GENERAL PSYCHOSOCIAL LONG-TERM AND LATE EFFECTS		
• Depression, depressive symptoms • Distress (multifactorial unpleasant experience of psychological, social, and/or spiritual nature) • Worry, anxiety • Fear of recurrence • Pain-related concerns • End-of-life concerns: death and dying • Changes in sexual function and/or desire • Challenges with body image (secondary to surgery, hormonal therapy) • Challenges with self-image • Relationship and other social role difficulties • Return to work concerns and financial challenges		

ED indicates erectile dysfunction; PSA, prostate-specific antigen; DRE, digital rectal examination. [a]According to the National Cancer Institute Dictionary of Cancer Terms, active surveillance indicates a treatment plan that involves closely watching a patient's condition but not giving treatment unless there are changes in test results that show the condition is getting worse. Active surveillance may be used to avoid or delay the need for treatments such as radiation therapy or surgery, which can cause side effects or other problems. During active surveillance, certain exams and tests are done on a regular schedule. It may be used in the treatment of certain types of cancer, such as prostate cancer. It is a type of expectant management. Watchful waiting indicates closely watching a patient's condition but not giving treatment unless symptoms appear or change. Watchful waiting is sometimes used in conditions that progress slowly. It is also used when the risks of treatment are greater than the possible benefits. During watchful waiting, patients may be given certain tests and exams. Watchful waiting is sometimes used in prostate cancer. It is a type of expectant management.

However, further efforts are needed to build upon existing resources, particularly with regard to guidance and support for primary care clinicians. Physician and nonphysician primary care clinicians often rely on prostate cancer specialists (urologists and radiation and medical oncologists) to help them manage the care of cancer survivors. Survivors themselves may rely on cancer specialists for cancer-related and non–cancer-related care.[42,43] However, scant information

is available regarding the degree to which cancer specialists are meeting the increasing needs of cancer survivors and their primary care clinicians.[44-46] Due to the prolonged natural history of prostate cancer and the growing number of survivors, primary care clinicians inevitably participate in the care of these men.[47] Yet it is often unclear who has principal responsibility for prostate cancer survivorship care and what it entails.[42,44]

For these reasons, The Survivorship Center[4] convened a multidisciplinary expert workgroup to review the current literature on prostate cancer, its treatments, and their effects in order to provide clinical follow-up care guidelines focused on the role of primary care clinicians in caring for prostate cancer survivors. The survivorship topic areas examined include health promotion (nutrition, physical activity, smoking cessation, alcohol consumption), surveillance for cancer recurrence and screening for second primary cancers, physical and psychosocial long-term and late effects, and care coordination and practice implications. The resulting ACS Prostate Cancer Survivorship Care Guidelines provide a combination of evidence and expert clinical practice-based management recommendations to guide prostate cancer survivorship care in primary care settings.

METHODS

Literature Review

To develop the ACS Prostate Cancer Survivorship Care Guidelines, The Survivorship Center conducted multiple literature searches. An initial search, conducted in the fall of 2012, was used to establish a foundation of published evidence for use with an expert workgroup composed of 16 multidisciplinary experts specializing in the care of patients with prostate cancer and the treatment of long-term and late effects experienced by prostate cancer survivors. Experts were nominated by The Survivorship Center's Steering Committee and ACS staff and were selected to represent both primary care and oncology perspectives, with a specific focus and expertise in prostate cancer treatment and follow-up care. The Survivorship Center selection process established 20 members as the workgroup maximum to ensure feasibility of discussions and division of work. Topic areas for the initial literature search included health promotion (nutrition, physical activity, tobacco/smoking cessation, and avoiding/limiting alcohol consumption), surveillance for cancer recurrence and screening for second primary cancers, physical and psychosocial long-term and late effects, and care coordination. Using PubMed and the inclusion criteria defined below, Survivorship Center staff selected key articles published between 2004, after the publication of the National Action Plan for Cancer Survivorship,[48] and 2012, when the guidelines development began. Search terms were based on treatment types and the specific long-term or late effects of interest. Search terms included: cancer survivor + review or meta-analysis or systematic review + guidelines or guidance paired with prostate cancer, prostate cancer survivor, or prostate cancer patient posttreatment + (symptom management, late effects, long-term effects, psychosocial care, palliative care, health promotion, surveillance, screening for new cancers, self-management, guidelines or guidance, follow up or follow-up, side effects + chemotherapy, side effects + radiation, side effects + surgery, treatment complications, genetic counseling and testing, survivor or patient interventions, provider interventions, provider education, barriers). To gain a better understanding of the components that could be included in comprehensive survivorship care guidelines, staff reviewed the Long-Term Follow-Up Guidelines for Survivors of Childhood, Adolescent, and Young Adult Cancers of the Children's Oncology Group (survivorshipguidelines.org). In addition, staff researched other domestic and international guidelines published to guide clinical follow-up care of cancer survivors to ensure that ACS guidelines were not duplicative of existing information. Staff leveraged the expertise of the ACS librarian and Survivorship Center principal investigator to conduct the literature search and determine inclusion/exclusion criteria for publications. An independent systematic evidence review was not conducted.

In November 2012, the expert workgroup convened and was tasked with reviewing the list of publications and adding any additional relevant publications. Inclusion criteria for additional publications included criterion a and any one of the following (b-d): a) peer-reviewed publication in English since 2004; b) seminal article(s) prior to this date that continue to strongly influence clinical practice, including randomized controlled trials (RCTs), prospective studies, and well-conducted population-based case-control studies; c) large studies with more than 200 cancer cases analyzed; and/or d) high-quality assessment of covariates and analytic methods (analyses controlled for important confounders [eg, preexisting comorbid conditions]). Additional publications that were identified included guidelines or guidance developed by other organizations (eg, NCCN,[40,41,49] Michigan Cancer Consortium[50]), specific medical centers (eg, The University of Texas MD Anderson Cancer Center Clinical Tools and Resources Prostate Cancer Survivorship algorithm[51]), or available from other countries (eg, Australia Cancer Survivorship Centre). Studies on childhood cancers, qualitative studies, and non-English publications were excluded. A total of 468 articles (see online supporting information) met the inclusion criteria for the literature review and 222 were included as citations to support the guidelines. The majority of the citations supporting long-term and late effect description and management recommendations rely largely on case-control studies with fewer than 500 participants and reviews that combine studies

with varying outcome measures. There were several studies that used existing population-based data to better understand the impact of treatment on long-term and late effects. There was limited availability of RCTs of prostate cancer survivors. This lack of clinical trials is a limitation of the current state of the science for survivorship.

Literature Synthesis and Expert Workgroup Recommendations

Expert workgroup members were divided among specific topic-based subgroups based on their preference and asked to review and synthesize information from publications related to the specific topic(s). Based on a combination of published evidence and practice-based experience, each expert workgroup member drafted clinical follow-up care recommendations to be considered for inclusion in the guidelines. Workgroup members were asked to consider the following criteria as they synthesized their findings:

1. Level of evidence (I, meta-analyses of RCTs; IA, RCT of prostate cancer survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect [eg, managing urinary incontinence, erectile dysfunction, etc]; IIA, non-RCT based on prostate cancer survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect [eg, managing urinary incontinence, erectile dysfunction, etc]; III, case study; and 0, expert opinion, observation, clinical practice, literature review, or pilot study).
2. Consistency across studies, including across study designs (separating results by study design when presenting the evidence).
3. Dose response when presenting long-term and late effects resulting from radiation therapy.
4. Race/ethnicity differences in diagnosis and treatment that may impact long-term and late effects of survivorship.
5. Second primary cancers for which survivors are at high risk due to treatment, genetic considerations, etc.

Draft recommendations were compiled and reviewed by the entire expert workgroup during 3 conference telephone calls to develop consensus on the full set of clinical follow-up care guidelines. In cases of disagreement regarding the recommendations, workgroup members were asked to again consider the evidence and achieve consensus for multidisciplinary clinical practice recommendations.

Upon completion, the guidelines underwent internal medical review and received approval by the ACS's National Board of Directors. During article development, an additional literature review was conducted to identify articles published between November 2012 and February 2014 to ensure the evidence base was up-to-date. While new articles were added to the literature review, there was no resulting impact or change in the guidelines. In March 2014, the guidelines article was sent to internal and external experts for final review and comment, prior to submission for publication. This peer-review process primarily resulted in modifications pertaining to the methods, levels of evidence, and clarity of the article. While developing survivorship clinical follow-up care guidelines is a unique and evolving process, staff sought to align as closely as possible with the established ACS process for developing screening guidelines (Table 2).[52] According to the ACS process, these guidelines will be briefly updated as needed and rewritten every 5 years. Earlier updates may be initiated should strong evidence be identified warranting review.

GUIDELINES FOR THE PRIMARY CARE MANAGEMENT OF PROSTATE CANCER SURVIVORS HEALTH PROMOTION

Table 3 outlines the nutrition, physical activity, smoking cessation, and alcohol consumption guidelines for prostate cancer survivorship. When appropriate, these guidelines incorporate existing ACS nutrition and physical activity guidelines for cancer survivors.[53]

Information

Prostate cancer survivors often report the lack of accessible quality information to assist with decision-making and symptom management across the cancer continuum.[26,54,55] Study findings suggest unmet information and supportive care needs are prevalent among prostate cancer survivors.[26,55] Because information needs evolve as patients transition from treatment through various phases of survivorship, survivor and caregiver information needs should be routinely assessed and met via standard information about prostate cancer and treatment, long-term and late effects, and other relevant comorbid health concerns such as diabetes or cardiovascular disease, with support services provided as necessary.[56]

Primary care clinicians should provide regular evaluations of survivors to determine appropriate levels of participation in health promotion and lifestyle modification programs.[57] Facilitators (eg, clinician and spousal involvement) and barriers to engaging in physical activity (eg, preexisting comorbidities) should be addressed and monitored prior to the initiation of behavior change programs.

Obesity

Obesity has been found to be associated with worse health outcomes (prostate cancer-specific mortality and biochemical recurrence) for patients with prostate cancer.[58-62] Primary care clinicians should conduct routine assessments of

TABLE 2. Comparison of ACS Survivorship Care Guideline Development Process With ACS Cancer Screening Guideline Development Process

STANDARDS	ACS PROCESS FOR CANCER SCREENING GUIDELINE DEVELOPMENT	ACS SURVIVORSHIP CARE GUIDELINE DEVELOPMENT PROCESS
Transparency	A published article defines the new ACS process, and all ongoing and planned work in cancer screening guideline production and revision will be posted on the ACS Web site.	An article was published describing the survivorship care guideline process and the details are outlined in the methodology of each guideline article.
Conflicts of interest	ACS guideline developers will publicly declare financial and institutional conflicts, and all will be expert generalists to avoid the appearance of professional conflicts.	ACS survivorship care guideline developers will publicly declare financial and institutional conflicts. The guidelines panels will represent a diverse group of providers, including oncologists, surgeons, primary care clinicians, psychosocial providers, etc. to avoid the appearance of professional conflicts.
Group composition	Guidelines will be developed by a 12-person panel of multidisciplinary experts in clinical screening, including a patient advocate.	Survivorship care guideline expert panels will consist of 10-15 practicing oncology experts. At least one member of each panel will represent the primary care field.
Systematic review of evidence	The ACS will commission high-quality and independent systematic evidence reviews to serve as the basis for all guidelines.	The ACS will conduct preliminary systematic evidence reviews to develop a foundation for expert panelists. Expert panelists will divide into topic-focused subgroups and conduct additional literature review and analysis to serve as the basis for all guidelines. When applicable, existing guidelines for health promotion, screening, surveillance, and psychosocial care will be incorporated.
Grading strength of recommendations	The ACS will be explicit about harms as well as benefits, and will develop a grading scheme to rate confidence in recommendations that will be consistent with methods used by other organizations.	The ACS developed a consistent grading scheme that is outlined in the methodology section of each survivorship care guideline. This grading scheme is consistent with methods used by other organizations endeavoring to develop survivorship care guidelines.
Articulation of recommendations	ACS guidelines will be written for audiences of primary care clinicians, the general public, and policy makers.	ACS survivorship care guidelines are written for primary care clinicians. Resources will be developed to support the information needs of the general public and policy makers.
External review	Before publication, all draft guidelines will be vetted by relevant experts, organizations, and societies, and any differences will be explicitly discussed in the published guideline.	Before publication, all draft survivorship care guidelines will be vetted by internal experts, the Priority Mission Outcomes Committee, National Board of Directors, and relevant external experts, organizations, and societies. Any differences will be explicitly discussed in the published guideline.
Updating	ACS guidelines will be briefly updated as needed, and at a minimum at least annually online with relevant new studies, and rewritten every 5 y.	ACS survivorship care guidelines will be briefly updated as needed, and at a minimum at least annually online with relevant new studies, and rewritten every 5 y.

ACS indicates American Cancer Society.

body mass index among survivors across the prostate cancer survivorship continuum. For survivors who are overweight or obese, clinicians should recommend limiting the consumption of high-calorie foods and beverages and promote weight loss activities such as increasing physical activity[53,57] as they would do for patients without cancer.

Physical Activity

Some cohort studies have suggested that physical activity may decrease the risk of prostate cancer recurrence, improve cancer-specific and overall survival, hasten recovery from the immediate side effects of treatment, and prevent long-term effects.[53,63-65] Various intervention studies among cancer survivors show that exercise can improve fatigue, anxiety, depressive symptom management, self-esteem, happiness, and QOL.[66] Primary care clinicians should educate survivors regarding the association between physical activity and lower overall and prostate cancer-specific mortality and improved HRQOL. Although the evidence relating these recommendations to prostate cancer recurrence has limitations, survivors should be informed that there are other substantial benefits, such as decreasing the risk of cardiovascular disease and improved physical functioning.[67] Primary care clinicians should counsel survivors to avoid inactivity and assist with ensuring a return to normal daily activities as soon as possible after diagnosis.

TABLE 3. Health Promotion Guidelines

GUIDELINE	LEVEL OF EVIDENCE[a]
Assess information needs related to prostate cancer and its treatment, side effects, other health concerns, and available support services and provide or refer survivors to appropriate resources to meet these needs.	0
Counsel survivors to achieve and maintain a healthy weight by limiting consumption of high-calorie foods and beverages and promoting increased physical activity.	III, 0
Counsel survivors to engage in at least 150 min per wk of physical activity, this may include weight-bearing exercises.	III, 0
Counsel survivors to achieve a dietary pattern that is high in fruits and vegetables and whole grains. • Consume a diet emphasizing micronutrient-rich and phytochemical-rich vegetables and fruits, low amounts of saturated fat, intake of at least 600 IU of vitamin D per d and consuming adequate, but not excessive, amounts of dietary sources of calcium (not to exceed 1200 mg/d). • Refer survivors with nutrition-related challenges (eg, bowel problems that impact nutrient absorption) to a registered dietitian.	III, 0
Counsel survivors to avoid or limit alcohol consumption to no more than 2 drinks per d.	III, 0
Assess for tobacco use and offer and/or refer survivors to cessation counseling and resources. Counsel survivors to avoid tobacco products.	III, 0

IU indicates international units. [a]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of prostate cancer survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); IIA, non-RCT based on prostate cancer survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); III, case study; 0, expert opinion, observation, clinical practice, literature review, or pilot study.

Survivors without physical limitations or contraindications should aim for at least 150 minutes per week of moderate-intensity exercise or 75 minutes per week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate and vigorous intensity aerobic physical activity, which may include routine weight-bearing exercises.[53] Research has demonstrated that 3 or more hours per week of vigorous activity among prostate cancer survivors was associated with a 61% reduction in prostate cancer-specific death and a nearly 50% reduction in all-cause mortality.[53,64]

Nutrition

Although research is ongoing, findings suggest that dietary patterns high in vegetables, fruits, and whole grains improve survival and decrease the risk of second cancers and chronic diseases among cancer survivors.[53,68] The ACS guidelines for nutrition and physical activity for cancer survivors recommend that diets for prostate cancer survivors should emphasize micronutrient-rich and phytochemical-rich vegetables and fruits, low amounts of saturated fat, an intake of at least 600 IU of vitamin D per day, and consuming adequate, but not excessive, amounts of dietary sources of calcium (ie, not to exceed 1200 mg/day).[53] These dietary suggestions are especially relevant to survivors receiving ADT due to their increased risk of osteoporosis and fractures. Survivors with nutrition-related challenges, such as bowel problems affecting nutrient absorption, should be referred to a registered dietitian, preferably one who is also a Certified Specialist in Oncology Nutrition if available, for specialized nutrition counseling. Survivors should also be instructed to avoid or limit alcohol consumption to no more than 2 drinks per day as per the ACS guidelines.[53]

Smoking Cessation

Smoking after treatment of prostate cancer increases the risk of cancer recurrence and second cancers.[69,70] Primary care clinicians should assess for tobacco use and offer and/or refer survivors to cessation counseling and resources.[57] Clinical guidelines are available from the Agency for Healthcare Research and Quality's Guide to Clinical Preventive Services (ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco/clinicians/update/treating_tobacco_use08.pdf).[71]

SURVEILLANCE FOR PROSTATE CANCER RECURRENCE

The literature is not definitive with regard to how often PSA levels should be monitored to detect prostate cancer recurrence after treatment or how best to follow men on active surveillance.[72,73] The NCCN guidelines for prostate cancer treatment[40] recommend measuring serum PSA levels every 6 to 12 months for the first 5 years after definitive treatment and then to recheck annually. This recommendation is routinely updated and is reflected as a component of the surveillance guidelines in Table 4. Because the recurrence of prostate cancer may result in substantial morbidity and can in rare cases occur in the absence of a PSA elevation, an annual DRE is also appropriate to monitor for prostate cancer recurrence after treatment.[40]

TABLE 4. Surveillance Guidelines for Prostate Cancer Recurrence

GUIDELINE	LEVEL OF EVIDENCE[a]
Measure serum PSA level every 6 to 12 mo for the first 5 y, then recheck annually thereafter.	2A[b]
Refer survivors with elevated or rising PSA level back to the primary treating specialist for further follow-up and treatment.	0
Perform an annual DRE in coordination with cancer specialist to avoid duplication.	2A[b]

PSA indicates prostate-specific antigen; DRE, digital rectal examination. [a]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of prostate cancer survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); IIA, non-RCT based on prostate cancer survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); III, case study; 0, expert opinion, observation, clinical practice, literature review, or pilot study. [b]National Comprehensive Cancer Network rating indicates that "based upon lower-level evidence, there is uniform consensus that the intervention is appropriate."

Prostate cancer surveillance with PSA and DRE is recommended to remain under the purview of the primary treating specialist until an explicit transfer of responsibility to the primary care clinician is initiated. Primary care clinicians are often involved with prostate cancer treatment decision-making and may already be involved in the care of men during and after treatment.[74,75] However, once the migration or explicit transfer of responsibility for cancer surveillance to the primary care clinician has occurred, the following recommendations can guide PSA testing intervals and thresholds for referral according to initial treatment type.

After radical prostatectomy, the PSA usually drops to an undetectable level (less than 0.03 ng/mL) within a 2-month period. There is more than one definition of postradical prostatectomy biochemical recurrence.[76,77] Therefore, any confirmed detectable PSA level after surgery is an indication for referral to the primary treating specialist. After radiation therapy, the PSA falls slowly and reaches its lowest level ("PSA nadir") after 6 months to several years; the target PSA is less than 1.0 ng/mL. Referral should be made for a rising PSA trend after the nadir is reached even when the absolute values are low.[78] A "PSA bounce" may occur, usually within 2 years, in which the PSA level begins to rise and then comes back down.[79-81] In contrast to prostate cancer recurrence, this phenomenon is self-limited, although it may still raise concerns for patients and primary care clinicians.[78] A DRE and consultation with the primary treating radiation therapist is recommended after confirmation of a rising PSA in 3 months.

Among men treated with ADT, each has a different rate of PSA decline and nadir. The overarching goal should be to achieve a PSA level less than 0.05 or 0.1 ng/dL depending on the assay.[78] The decline should be within 6 to 8 weeks but will depend on the PSA level at the time of ADT initiation (ie, higher PSA levels take longer to decline). Achieving a low PSA level after the initiation of ADT has prognostic value. For example, in patients with metastatic disease, achievement of a PSA nadir of 4 ng/mL or less after 7 months of ADT is a strong predictor of survival.[82,83] ADT is generally managed by the primary treating specialist throughout its duration. However, as will be discussed below, the primary care clinician may need to be involved in monitoring and managing the adverse effects of ADT (eg, metabolic syndrome).

SCREENING FOR SECOND PRIMARY CANCERS

Clinicians should be aware of a small increased risk of secondary malignancies after radiation therapy compared with men receiving surgery.[84-86] Several large-scale studies of irradiated patients have indicated a slightly increased risk of secondary neoplasms in the irradiated area in both the bladder and colon/rectum.[87-89] Evidence does not support increased frequency or intensity of screening, but adherence to routine ACS screening guidelines for the early detection of any new cancers is recommended (Table 5). Time is needed to determine whether advanced techniques to deliver higher more focal radiation doses will impact rates of bladder or bowel cancer.

It is recommended that prostate cancer survivors presenting with hematuria should undergo a thorough evaluation to rule out bladder cancer; however, screening asymptomatic prostate cancer survivors with urinalysis is not recommended. For patients with rectal cancer, keeping up-to-date with colorectal cancer screening for all age-appropriate/risk-appropriate men and a thorough evaluation of new rectal bleeding (even if colorectal cancer screening is current) is recommended. Persistent bleeding, pain, or other symptoms of undetermined origin may require multidisciplinary management including evaluation by an appropriate specialist for diagnostic evaluation as well as the treating radiation oncologist.

ASSESSMENT AND MANAGEMENT OF PHYSICAL AND PSYCHOSOCIAL EFFECTS OF PROSTATE CANCER AND TREATMENT

Survivors should be assessed for physical (eg, urinary, sexual, bowel) and psychosocial effects of prostate cancer and its

TABLE 5. Guidelines for Screening and Early Detection of Second Primary Cancers

GUIDELINE	LEVEL OF EVIDENCE[a]
Adhere to American Cancer Society screening and early detection guidelines (cancer.org/professionals). Prostate cancer survivors having undergone radiation therapy may have slightly higher risk of bladder and colorectal cancers and may need to follow screening guidelines for higher-risk individuals, if available.	I
For survivors presenting with hematuria, perform a thorough evaluation to rule out bladder cancer, including urologist referral for cystoscopy.	IIC
Refer survivors presenting with persistent rectal bleeding, pain, or other symptoms of unknown origin to the appropriate specialist as well as the treating radiation oncologist to conduct a thorough evaluation for rectal cancer.	0

[a]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of prostate cancer survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); IIA, non-RCT based on prostate cancer survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors, but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); III, case study; 0, expert opinion, observation, clinical practice, literature review, or pilot study.

treatment; the focus of assessment should be tailored to the type of cancer treatment received and current disease state to trigger appropriate self-management and clinical management strategies for support and therapy. Assessing baseline patient-reported HRQOL and tracking HRQOL at least annually is an important element of high-quality survivorship care.[38,90] Validated surveys such as the 5-item Sexual Health Inventory for Men survey (Fig. 2)[91-93] or the International Index of Erectile Function[94] or more comprehensive measures of prostate cancer HRQOL such as the Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP)[95,96] are helpful in identifying and understanding the side effect burden. If brief screening tools are not available, simply starting a conversation around urinary and sexual function may uncover symptom burdens. Shared decision-making around patient-reported problem areas may help inform clinical management decisions including whether to pursue referral and recommendations for follow-up.

The following physical and psychosocial effects may be experienced by prostate cancer survivors. Varying levels of evidence exist to demonstrate the presence of these effects during survivorship. There is often limited information on the time interval after treatment as well as the prevalence of these effects among survivors. The guidelines (Table 6) combine available evidence with expert consensus to assist primary care clinicians in managing prostate cancer survivorship care.

Anemia

Anemia is a common complication of ADT.[97,98] The well-known effect of androgens on erythropoiesis leads to the side effect of a normochromic normocytic anemia in men undergoing ADT.[98] Periodic monitoring (eg, annual) of complete blood counts should be considered and anemia evaluated with a focus on potential causes other than ADT. There are no convincing data to support the routine treatment of asymptomatic anemia in men receiving ADT.

Bowel Dysfunction

Although acute effects of radiation on the rectal wall causing bowel irregularity, excessive flatulence, cramps, and diarrhea are common, late effects are increasingly less common due to improved planning and delivery techniques. Rectal bleeding, particularly for patients taking aspirin or anticoagulants, may be due to thinning and telangiectasia of the rectal mucosa. Acute effects may respond to stool softeners (ie, psyllium or methylcellulose powder or docusate), topical steroids, or antiinflammatories (ie, hydrocortisone suppositories, mesalamine, or hydrocortisone enemas).[99,100] Persistent and substantial bleeding might require careful evaluation by a gastroenterologist or colorectal surgeon with appropriate expertise and experience. Rectal ulceration potentially leading to rectourethral fistula is a risk, particularly if tissues are traumatized and deep biopsies with cauterization of telangiectatic tissues are performed. Other late effects might include anal sphincter dysfunction, rectal urgency, pain, and frequency. These may be improved with dietary consultation, referral to the radiation oncologist for management suggestions, hyperbaric oxygen therapy,[101] and the involvement of an experienced gastrointestinal specialist.[99]

Cardiovascular and Metabolic Effects

Primary care clinicians should be aware that troubling effects of ADT on cardiovascular and diabetic disease have been reported in prostate cancer survivors,[102] but evidence of heightened risk as a result of prostate cancer treatment remains unclear. In a systematic review, men treated with ADT had a 17% increase in cardiovascular-related mortality compared with men who did not undergo ADT.[103] While some trials show nonstatistically significant increases in cardiovascular mortality for men receiving ADT,[104-106] others have demonstrated that even short-term ADT use is associated with a shortened time to fatal myocardial infarction in men aged 65 years or older.[107,108] However, a meta-

SEXUAL HEALTH INVENTORY FOR MEN
IIEF-5

Patient's Study ID Number_____

Date of evaluation_____

PATIENT INSTRUCTIONS

Sexual health is an important part of an individual's overall physical and emotional well-being. Erectile dysfunction is one type of very common sexual complaint. There are many different treatment options for erectile dysfunction. This questionnaire is designed to help you and your physician identify if you may be experiencing erectile dysfunction and to potentially discuss treatment options.

Each question has several responses from which you are asked to choose the one that best describes your own situation. Please be sure that you select at least one but only one response by circling the number that best fits your answer.

Over the past six months:

How do you rate your confidence that you could get and keep an erection?		Very low 1	Low 2	Moderate 3	High 4	Very high 5
When you had erections with sexual stimulation, how often were your erections hard enough for penetration?	No sexual activity 0	Almost never/never 1	A few times (much less than half the time) 2	Sometimes (about half the time) 3	Most times (much more than half the time) 4	Almost always/ always 5
During sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?	Did not attempt intercourse 0	Almost never/never 1	A few times (much less than half the time) 2	Sometimes (about half the time) 3	Most times (much more than half the time) 4	Almost always/ Always 5
During sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?	Did not attempt intercourse 0	Extremely difficult 1	Very difficult 2	Difficult 3	Slightly difficult 4	Not difficult 5
When you attempted sexual intercourse, how often was it satisfactory for you?	Did not attempt intercourse 0	Almost never/never 1	A few times (much less than half the time) 2	Sometimes (about half the time) 3	Most times (much more than half the time) 4	Almost always/ always 5

Score _____

If your score is 21 or less, you show signs of erectile dysfunction, and your doctor can suggest treatment options that can improve your condition.

FIGURE 2. Sexual Health Inventory for Men. An abridged 5-item version of the 15-item International Index of Erectile Function (IIEF-5) was developed to diagnose the presence and severity of erectile dysfunction (ED). Because of its simplicity and the favorable diagnostic properties reported herein, the IIEF-5 could aid in decreasing incorrect diagnoses of ED and decreasing the number of undiagnosed cases of ED worldwide. Reprinted with permission from Rosen RC, Cappelleri JC, Smith MD, Lipsky J, Peña BM. Development and evaluation of an abridged, 5-item version of the International Index of Erectile Function (IIEF-5) as a diagnostic tool for erectile dysfunction. *Int J Impot Res*. 1999;11:319-326.[93] Available at: pfizerpatientreportedoutcomes.com.

analysis pooling 4141 patients with a variety of nonmetastatic and non–hormone-refractory disease from 8 randomized trials revealed that cardiovascular death in men receiving ADT versus control was not significantly different among patients with prostate cancer.[109]

Metabolic syndrome has also been associated with ADT. Androgen deprivation may result in obesity, a decline in lean mass, decreased insulin sensitivity, increased high-density lipoprotein levels, and subcutaneous rather than visceral fat accumulation.[107] Attempts at defining specific

TABLE 6. Guidelines for Assessment and Management of Physical and Psychosocial Long-Term and Late Effects

GUIDELINE	LEVEL OF EVIDENCE[a]
Anemia: specific risk for men receiving ADT • Perform annual CBC to monitor hemoglobin levels.	0
Bowel dysfunction • Discuss bowel function and symptoms (eg, rectal bleeding) with survivors. • For men with a negative colorectal cancer screening result, prescribe stool softeners, topical steroids, or antiinflammatories for survivors experiencing rectal bleeding. • Refer survivors with persistent rectal symptoms (eg, bleeding, sphincter dysfunction, rectal urgency and frequency) to the appropriate specialist.	0
Cardiovascular and metabolic effects: specific risk for men receiving ADT • Follow USPSTF guidelines for evaluation and screening for cardiovascular risk factors, blood pressure monitoring, lipid profiles, and serum glucose (uspreventiveservicestaskforce.org/uspstopics.htm).	A: hypertension[b] B, I: type II diabetes[b] A, B: lipid disorders[b]
Distress/depression/PSA anxiety • Assess for distress/depression/PSA anxiety periodically (at least annually) using a simple screening tool, such as the Distress Thermometer. • Manage distress/depression using in-office counseling resources or pharmacotherapy as appropriate. • If office-based counseling and treatment are insufficient, refer survivors experiencing distress/depression for further evaluation and or treatment by appropriate specialists.	0
Fracture risk/osteoporosis: specific risk for men receiving ADT • Assess risk of fracture for men treated with ADT or older radiation techniques through baseline DEXA scan and calculation of a FRAX score. • For men determined to be high risk, prescribe weekly bisphosphonate therapy (oral alendronate at a dose of 70 mg) or annual intravenous zoledronic acid at a dose of 5 mg to increase bone density. Denosumab is also approved by the FDA to treat men at increased risk of osteoporosis.	2A[c]
Sexual dysfunction/body image • Discuss sexual function with survivors. • Use validated tools, such as the SHIM, to monitor erectile function over time. • Erectile dysfunction may be addressed through a variety of options, including penile rehabilitation or prescription of phosphodiesterase type 5 inhibitors (eg, sildenafil, vardenafil, tadalafil). • Refer men with persistent sexual dysfunction to a urologist, sexual health specialist, or psychotherapist to review treatment and counseling options.	0
Sexual intimacy • Encourage couples to discuss their sexual intimacy and refer to counseling or support services as appropriate. • Prescribe medication as described above to address erectile dysfunction. • Instruct couples on use of sexual aids to improve erectile dysfunction for men/male partners as well as postmenopausal symptoms for women. Refer to mental health professional with expertise in sex therapy.	0
Urinary dysfunction • Discuss urinary function (eg, urinary stream, difficulty emptying the bladder) and incontinence with all survivors. • Consider timed voiding, prescribing anticholinergic medications (eg, oxybutynin) to address issues such as nocturia, frequency, or urgency. Consider alpha-blockers (eg, tamsulosin) for slow stream. • Refer survivors with postprostatectomy incontinence to a physical therapist for pelvic floor rehabilitation; at a minimum, instruct survivors about Kegel exercises. • Refer men with persistent leakage or other urinary symptoms to a urologist for further evaluation (eg, urodynamic testing, cystoscopy) and discussion of treatment options including surgical placement of a male urethral sling or artificial urinary sphincter for incontinence.	0
Vasomotor symptoms (eg, hot flushes): specific risk for men receiving ADT • Although not approved by the FDA for this indication, prescription of selective serotonin or noradrenergic reuptake inhibitors or gabapentin may offer symptom relief.	0/I (gabapentin trial)

ADT indicates androgen deprivation therapy; CBC, complete blood count; USPSTF, US Preventive Services Task Force; PSA, prostate-specific antigen; DEXA, dual-energy x-ray absorptiometry; FRAX, World Health Organization Fracture Risk Assessment Tool; FDA, US Food and Drug Administration; SHIM, Sexual Health Inventory for Men. [a]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of prostate cancer survivors; IB, RCT based on cancer survivors across multiple sites; IC, RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); IIA, non-RCT based on prostate cancer survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); III, case study; 0, expert opinion, observation, clinical practice, literature review, or pilot study. [b]A indicates the USPSTF recommends the service. There is high certainty that the net benefit is substantial. B indicates that 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. I indicates that 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. [c]National Comprehensive Cancer Network rating indicates "Based upon lower-level evidence, there is uniform consensus that the intervention is appropriate."

guidelines that encompass the prevention and treatment of metabolic syndrome have focused on modifying specific risk factors through intensive lifestyle modification and pharmacological therapy.[110] Given the variable and controversial evidence regarding the role of ADT in cardiovascular and diabetic morbidity, no formal recommendations can be made for any specific cardiac intervention (ie, stress testing or cardiac catheterization/revascularization). However, periodic evaluation and screening for cardiovascular risk factors, blood pressure monitoring, lipid profiles, and serum glucose should be routine, as provided by joint statement recommendations from several science advisory panels,[111] especially in patients being considered for more than 6 months of ADT.[102,111,112]

Distress/Depression/PSA Anxiety

Distress can take the form of myriad unpleasant emotional, cognitive, and behavioral experiences that, when persistent, can undermine patients' coping abilities and negatively impact HRQOL.[113,114] Estimates indicate that as many as 30% of patients with prostate cancer experience clinically relevant general distress,[115] 25% have increased anxiety, and nearly 10% experience major depressive disorder.[116-118] Most studies have focused on the year after primary treatment, with limited evidence suggesting that distress diminishes within the first 5 years after treatment for some patients.[115] Depression is not only a psychological burden for prostate cancer survivors it also has other associated health consequences such as medical nonadherence, increased emergency service use,[116] possible increased rates of suicidal ideation/suicide,[119,120] and declines in urinary and bowel function after treatment for localized prostate cancer.[118,121]

Early identification, treatment, and ongoing assessment for psychological distress are important aspects of survivorship care,[122] yet clinicians may inconsistently ask about psychological distress. A small trial indicated that interventions among prostate cancer survivors who experience psychosocial distress are reported to improve QOL.[123] Importantly, African American patients with cancer may be less likely to seek, to be referred to, and to receive psychosocial services.[124,125] Clinical trials show that routine distress screening and resource referral is effective in relieving distress over time.[126] Survivors should be routinely screened for distress across all stages of survivorship. In primary care settings, a simple screening tool (eg, the Distress Thermometer) (Fig. 3)[49,127,128] may prove to be most useful in identifying those patients who require psychosocial care referral or resources.

Some survivors may underreport distress. Consideration should also be given to partner and family reports of survivor distress.[129] Key risk factors for distress in men that should be considered include being single/unmarried, having a low educational level, having advanced disease, having low physical or cognitive functioning, being of a younger age, having medical comorbidities, having a psychiatric history, and/or having poor coping skills.[130] Positive screens may warrant referral for further evaluation and/or treatment if office-based counseling and treatment are insufficient.[131,132]

Furthermore, the effects of low testosterone levels may affect the mood of some men, making them feel depressed or short-tempered. In one study, men undergoing ADT who had a history of depression were more likely to develop major depressive disorder.[133,134] For men being considered for ADT, the early identification of underlying or undertreated depression through routine screening for depression is recommended.

Illness-related uncertainty is a significant stressor that negatively impacts HRQOL for some patients.[135,136] For example, PSA surveillance may exacerbate anxiety. PSA anxiety is common among survivors and symptoms can present weeks prior to anticipated testing. Anxiety can interfere with effective management and result in mistrust of results or requests for delayed or more frequent testing.[137,138] Clinicians should be alert to the possibility of PSA anxiety as part of regular distress screening. Care management and patient education should aim to reduce uncertainty and perceptions of unrealistic threat in survivors with elevated testing anxiety. Survivors with significant or persistent PSA anxiety may be at heightened risk of depressive symptoms or general distress. Referrals for behavioral intervention may be useful for symptom reduction and improved tolerance of uncertainty.

Fracture Risk/Osteoporosis

The detrimental effects of ADT on bone metabolism are well established. Several cohort and cross-sectional studies have demonstrated accelerated bone loss in men treated with ADT.[110,111,139-141] The loss in bone mineral density is rapid even during the initial year of treatment, with rates as high as 4.6% in the total hip, femoral neck, and lumbar spine of men with nonmetastatic prostate cancer.[142] In addition, studies indicate that men treated with ADT had a 2-fold to 5-fold increased risk of fracture compared with men not treated with ADT.[143-145] Furthermore, one retrospective population-based study of older radiation techniques demonstrated that external beam radiation therapy was associated with a 76% increased risk of hip fracture, which additionally increased to 145% when used in combination with ADT compared with radical prostatectomy alone.[146] Other contributing factors such as duration of ADT, patient age, and comorbidities may play a role. More recent conformal radiation techniques have substantially lessened the risk.

Given the often prolonged natural history of prostate cancer in survivors with nonmetastatic, biochemically recurrent disease,[147,148] ADT administration requires close monitoring for osteoporosis and the development of fractures. In addition to obtaining a baseline assessment of calcium and vitamin D levels, counseling regarding adequate dietary

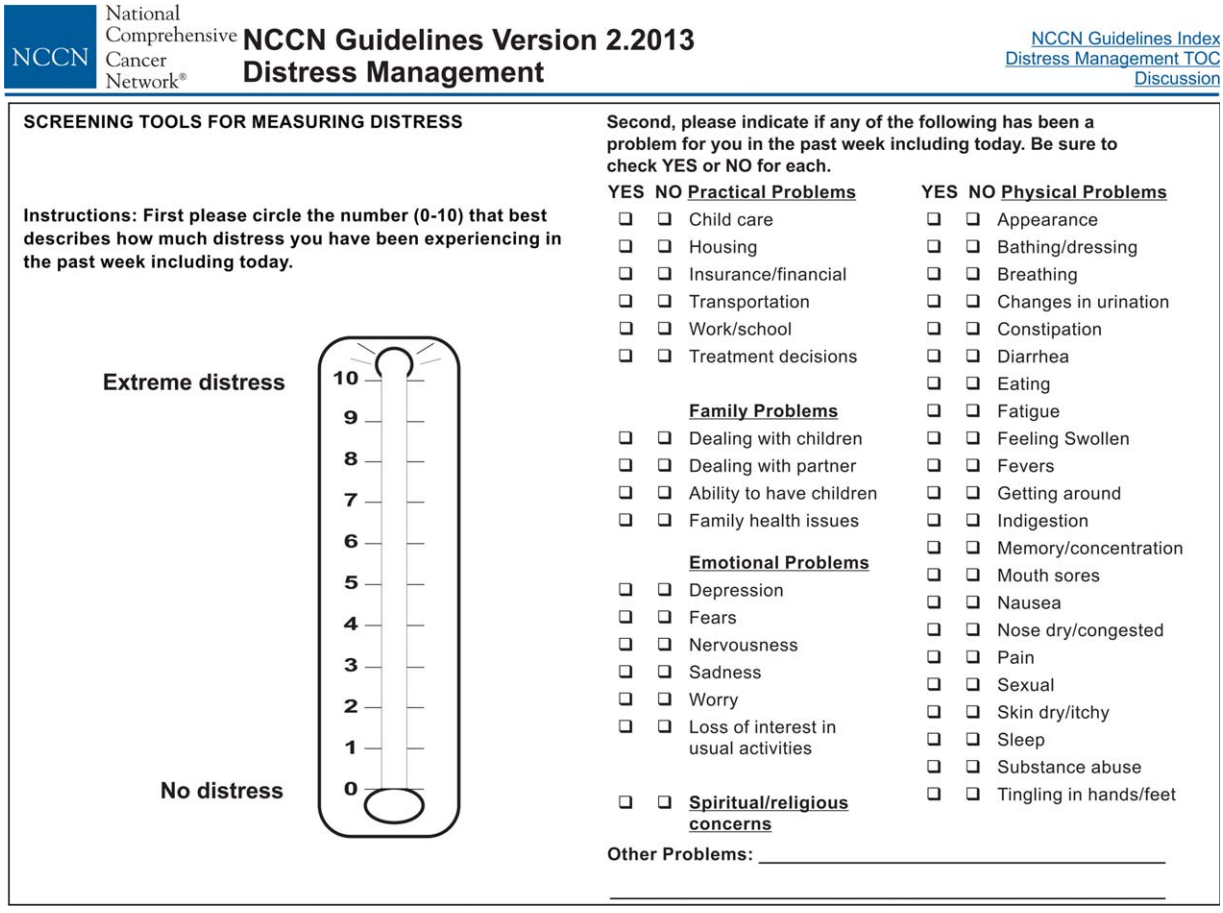

FIGURE 3. National Comprehensive Cancer Network (NCCN) Distress Thermometer Screening Tool Figure (DIS-A) from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Distress Management (Version 2.2013). Distress, a mix of anxiety and depressive symptoms, may cause sleeplessness, lack of appetite, trouble concentrating, and difficulty carrying on regular activities. Although some distress is normal, approximately one-third of patients with cancer experience significant distress. Only approximately 5% of those with cancer obtain psychological help. While distress does not affect the cancer itself, it does affect how patients cope with their cancer and their ability to follow treatment recommendations. The NCCN Distress Thermometer measures distress in a similar way to pain, namely, on a scale of 0 to 10, with 10 being the worst. Often, the emotional side effects of cancer are not discussed in as much detail as the physical side effects. This tool makes it easier for people to talk to their physicians about the emotional effects caused by the diagnosis, symptoms, and treatment of cancer. Patients are encouraged to complete the NCCN Distress Thermometer as part of their routine appointment preparation. Reproduced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Distress Management (V.2.2013). © 2013 National Comprehensive Cancer Network, Inc. Available at NCCN.org. Accessed May 22, 2013. To view the most recent and complete version of the NCCN Guidelines®, go online to NCCN.org.[49]

calcium and vitamin D intake should be instituted and, if necessary, supplementation should continue during the course of ADT.[40,149] For all men undergoing long-term ADT, a baseline bone mineral density imaging study (dual-energy x-ray absorptiometry scan) should be obtained and a World Health Organization Fracture Risk Assessment Tool (FRAX) score calculated (available at shef.ac.uk/FRAX/). Substantial data support that men with a history of osteoporosis or fractures should undergo a dual-energy x-ray absorptiometry scan prior to initiating hormonal therapy as the risk of fracture increases during the first 6 to 12 months.[149-151] ADT should be considered as secondary osteoporosis in the FRAX algorithm. The NCCN guidelines panel for prostate cancer recommends bisphosphonate therapy with either weekly oral alendronate at a dose of 70 mg or annual intravenous zoledronic acid at a dose of 5 mg to increase bone density in those receiving ADT who are at high risk of fracture (ie, a 10-year probability of hip fracture is 3% or higher or the 10-year probability of major osteoporosis-related fracture is 20% or higher) as recommended by the National Osteoporosis Foundation.[40,149] Denosumab is currently approved by the US FDA for men undergoing ADT who are at increased risk of osteoporosis and is recommended as a treatment option by NCCN.[40,110,149,152] Primary care clinicians should be familiar with the NCCN Task Force Report's Bone Health in Cancer Care report[149] and the Endocrine Society's guidelines for the management of osteoporosis in men.[152]

Sexual Dysfunction/Body Image

Biological and psychosocial aspects of sexual function are impacted by prostate cancer treatment. Many men do not return to their prior level of sexual function after surgery and there is no standard posttreatment approach to minimize erectile dysfunction (ED).[153-157] Older men, those

with preexisting ED, and patients who did not undergo nerve-sparing surgery are at highest risk of poor erectile function after surgery. Baseline function and comorbidity are also important to consider during sexual function recovery.[154] Men who experience ED after prostate cancer treatment may have never tried medications or devices to improve their erections.[158] Thus, it is important for primary care clinicians and primary treating specialists to open the door to sexual recovery after prostate cancer treatment by increased awareness and inquiry during routine clinical care.

Although controversial, early penile rehabilitation after prostate cancer surgery may improve sexual function outcomes and prevent end-organ penile damage due to neurovascular injury and fibrosis.[159-161] For example, phosphodiesterase type 5 (PDE-5) inhibitors (eg, sildenafil, vardenafil, and tadalafil) administered early in the course of recovery may assist with smooth muscle preservation and improve erectile function through increased tissue oxygenation.[162-166] The ability to achieve orgasm is often preserved after surgery but without ejaculation (ie, anejaculation) and can even occur without an erection. Urine leakage at orgasm (ie, climacturia) may also occur (more likely within 1 year after surgery) and can be mitigated by emptying the bladder before sexual activity or through the use of condoms.[167,168] Penile shortening has also been documented after surgery.[169]

Although some men may have had a trial period of treatment with a PDE-5 inhibitor, it is usually worth revisiting because some patients recover erectile function up to 2 to 4 years after surgery.[160,161] If unsuccessful or if the patient is not a candidate due to comorbidity, referral to a urologist or sexual health specialist is warranted to review treatment options including an intraurethral dissolvable prostaglandin pellet, intracavernosal prostaglandin injection, vacuum erection device,[170-172] and penile prosthesis. Combination therapy may also improve erectile function (eg, sildenafil and vacuum constriction), although this should be managed in collaboration with a urologist or sexual health specialist.[173]

ED is a common long-term effect of radiation therapy.[29,38,174] In contrast to the rapid effect of radical prostatectomy on erectile function, which may then improve with time, ED can be delayed in onset after radiation for a period of 6 to 36 months.[30] This worsening may appear as a slow decline due to local neurovascular changes, and certainly have contributing factors such as aging, vascular disease, diabetes mellitus, and prior pelvic surgery.[175] The percentage of men who experience such erectile issues varies across studies.[154] The use of adjuvant ADT in combination with radiation therapy will have at least a temporary negative impact on libido and erectile function.[102,176] Similar to the postsurgical setting, the persistence of bothersome ED after a trial of PDE-5 inhibitors in appropriate candidates should prompt referral to a urologist to explore further medical, surgical, or device treatments.

While limited evidence is available regarding interventions to counteract ED for men receiving ADT, consultation with a urologist specializing in ED is recommended for those men who wish to explore possible alternatives. Although men receiving ADT are deprived of testosterone and may not experience a strong physiologic desire for sex, clinical experience suggests that some men wish to continue sexual activity as an important aspect of their relationship with a partner. This is based on their psychological desire, including maintaining intimacy and attending to their partner's sexual needs.[177] Rarely, some men have been able to attain erections with partner stimulation. If a trial of PDE-5 inhibitors is not successful, a referral to a urologist is warranted. It is therefore important for clinicians to ask whether men and their partners wish to address sexuality and intimacy maintenance while receiving ADT.

Sexual dysfunction is often more complex than solely the biology of erectile function. Other factors impacting sexual function include relationship status, depression, anxiety, grief, mourning, partner sexual dysfunction, and comorbidities.[130,178] Should the primary care clinician find the presence of mitigating psychosocial factors, referral to a sexual health or psychological professional is warranted.[179] Moreover, primary care clinicians and primary treating specialists should use a brief validated screening tool, such as the Sexual Health Inventory for Men[91-93] (Fig. 2) to assess and monitor erectile function over time. Endpoints beyond erectile function, such as the quality of erections, consistency of penetrative erections, and erection response with and without medication assistance should also be elicited and reported in a standard way across the medical community after any prostate cancer treatment. In addition, recognition of the partner's concerns and relationship aspects of sexuality are increasingly shown to be vital to sexual recovery.[30,180] Primary care clinicians should assess for psychological distress due to sexual changes and make appropriate referrals for managing the psychosocial aspects of sexuality.

Survivors may feel supported when they are asked about their body changes related to prostate cancer treatment, particularly when the side effects of treatment dominate their daily lives. Men who do not regain erectile function, who experience penile shortening, or who experience the demasculinizing side effects of hormonal treatment may benefit from discussing these issues with the primary care clinician.[169,181] Men who continue to have bowel or urinary symptoms may feel regressed and child-like. Men who have same-sex partners may have many similar concerns, but are additionally significantly more bothered by the loss of ejaculate than heterosexual men; they are thus at a greater risk of depression or anxiety.[182] When affected by treatment side effects, some men may lose self-regard. A brief exploration about body image can, if desired, lead to referral to supportive counseling for either the survivor or the couple.

Sexual Intimacy

Patients and partners need support in recovery of their sexual relationships. All prostate cancer treatments can affect men's erectile function.[175,183] Men report concern about their erectile function even when they are recovering well.[180,184] Men's ED affects partners and couples' intimate relationships.[30,185-188] A partner's sexual function can also have a significant effect on erectile function recovery and a partner's sexual dissatisfaction can negatively affect a man's erectile function and satisfaction.[189,190] Additional treatment effects can interfere with the couple's recovery of sexual intimacy, such as urinary incontinence after surgery; bowel and urinary irritation after radiation; and hot flushes, weight gain, loss of libido, and irritability due to hormonal deprivation.[30,191] Many couples do not recover their sexual relationship without support.[188,192] In such cases, couples either need help with recovery or with acceptance of an aspect of the relationship that has been lost. Interventions to enhance couples' emotional intimacy and sexual function have had some success, particularly for couples with fewer psychological resources or lower sexual function.[192,193]

A multidisciplinary approach is important and effective for sexual recovery.[180,194] Clinicians can prescribe medication to assist with erectile function. Nurses and clinical support staff can develop expertise in teaching men to use medications and mechanical aids to improve erectile function. For heterosexual couples, nurses can also provide education for postmenopausal female partners about methods to increase lubrication and sexual pleasure. Mental health professionals trained in sex therapy can help couples develop a new sexual paradigm based on current function and willingness to engage in sexual exploration.[195,196]

Partners should be included in usual prostate cancer survivorship care. They too are often distressed after the prostate cancer diagnosis and treatment.[186,189,197-199] Partners' and survivors' distress are mutually influential.[200] Shared decision-making should include both the patient's and partner's needs during key posttreatment planning of interventions such as the use of erectile aids, recognition of reactive depression or anxiety, management of the side effects of ongoing ADT, or referral to couples' counseling or sex therapy. Engaging couples during significant transitions such as biochemical recurrence of prostate cancer will provide maximum support and facilitate mutually acceptable decisions. Life stage and phase of disease may dictate the kind of support couples need. Middle-aged couples may be more upset but have more energy to work on functional recovery, especially in the early phase of the disease, whereas older couples or those in a later phase of the disease may experience fatigue and need respite.[201] More research is needed to understand and address the unique needs and concerns of same-sex couples.

Nonpartnered men also require assessment of their support needs. Treatment side effects can be dispiriting and without support, men may have difficulty coping or engaging in rehabilitation. If they become isolated, they can become at risk of prostate cancer-specific mortality.[202] Referral to support groups, peer counselors, or supportive counseling can provide an environment in which single men can address recovery concerns as well as concerns about finding a partner despite challenges to sexual function.

Urinary Dysfunction

Urinary dysfunction, especially stress incontinence (specifically termed postprostatectomy incontinence), may be bothersome after prostate cancer surgery.[28,203,204] Urinary function and incontinence tend to improve gradually after surgery and generally remain stable after one year.[205-207] The acute effects of radiation therapy on the urinary tract include irritative and/or obstructive symptoms presumed secondary to mucositis and edema (eg, frequency, urgency, hesitancy, dysuria, and urinary retention). Long-term effects may include urinary stricture, urinary incontinence, overactive bladder, fistula, hematuria presumed secondary to telangiectasias or mucosal thinning, decreased bladder capacity, slowing of the urinary stream, nocturia, and urinary retention.[28] Unfortunately, many men may be reluctant to initiate a discussion about incontinence, which means that unless they are asked for details concerning urinary function, problems will not be addressed. Due to their interactions with prostate cancer survivors for general medical care, primary care clinicians are well-positioned to ask about urinary continence, the frequency of urination, amount of leakage, and whether pads are being used. Ideally, the primary treating specialist would discuss urinary side effect management goals with the patient, and would provide the primary care clinician with a baseline patient-reported measure of urinary symptom burden and management options as well as indications for referral.

Several treatment options exist for urinary symptoms after prostate cancer surgery. Evidence is inconclusive regarding the impact of behavioral and pelvic floor physical therapy referral (eg, Kegel exercises) to improve postprostatectomy stress incontinence, but some men may benefit.[208,209] Some men may have urge incontinence or other irritative urinary symptoms (eg, nocturia, frequency, or urgency) and might benefit from anticholinergic medications (eg, oxybutynin) and/or urodynamic testing by a urologist.[210-212] Another long-term and possibly late problem is slowing of the urinary stream or difficulty emptying the bladder (ie, elevated postvoid residual urine), possibly due to urethral stricture or bladder neck contracture.[28] Inquiring about changes in the quality and duration of the urinary stream and incomplete bladder emptying can identify these potential problems, resulting in an alpha-blocker trial or an informed referral to a urologist. For men with persistent leakage, surgical placement of a male urethral sling or artificial urinary sphincter both greatly reduce and/or eliminate

TABLE 7. Care Coordination Guidelines

GUIDELINE	LEVEL OF EVIDENCE[a]
• The primary treating specialist is encouraged to provide a treatment summary and survivorship care plan to the PCC when survivorship care is transferred to the PCC. PCCs and treating oncology specialists should confer regarding the survivorship care plan components and determine roles and responsibilities that are appropriate for the survivor's condition and the resources available in the primary care setting. • PCCs should maintain their role as general medical care coordinator throughout the spectrum of prostate cancer detection, treatment, and aftercare, focusing on preventive care and the management of preexisting comorbid conditions, regularly addressing the patient's overall physical and psychosocial status, and those components of survivorship care that are mutually agreed upon with the treating clinicians. • Annually assess for the presence of long-term or late effects of prostate cancer and its treatment. Use of a validated tool such as EPIC-CP may be helpful in this assessment. • Encourage the inclusion of caregivers, spouses, or partners in usual prostate cancer survivorship care. • Refer survivors to appropriate community-based and peer support resources.	0

PCC indicates primary care clinician; EPIC-CP, Expanded Prostate Cancer Index Composite for Clinical Practice. [a]Level of evidence: I, meta-analyses of randomized controlled trials (RCTs); IA, RCT of prostate cancer survivors; IB, RCT based on cancer survivors across multiple sites, IC, RCT not based on cancer survivors, but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); IIA, non-RCT based on prostate cancer survivors; IIB, non-RCT based on cancer survivors across multiple sites; IIC, non-RCT not based on cancer survivors but on general population experiencing a specific long-term or late effect (eg, managing urinary incontinence, erectile dysfunction, etc); III, case study; 0, expert opinion, observation, clinical practice, literature review, or pilot study.

urinary incontinence and improve QOL.[211,213] Other incontinence resources include the National Association For Continence (nafc.org) and the Wound, Ostomy and Continence Nurses Society (wocn.org).

Comorbidities such as diabetes mellitus may also contribute to urinary dysfunction and lower urinary tract symptoms. Hyperbaric oxygen therapy may be of assistance in conditions in which hypovascularity or hypoxemia contribute to chronic symptomatology such as in radiation-induced cystitis. In general, referral to urologists, preferably those experienced in managing postradiation effects, is warranted for long-term and late urinary complications.[28]

Vasomotor Symptoms

ADT is associated with a number of adverse physical effects including vasomotor symptoms (eg, hot flushes), fatigue, sexual dysfunction, and decreased libido.[102,107,110,214] Hot flushes occur in as many as 40% of men treated with ADT and may persist for years after treatment.[215,216] Although not approved by the FDA for this indication, treatment options include the use of selective serotonin reuptake inhibitors or serotonin-norepinephrine reuptake inhibitors such as paroxetine at a dose of 10 mg/day or venlafaxine at a dose of 37.5 mg/day.[217] The use of gabapentin is also an option in treating hot flushes based on randomized clinical trials in men receiving ADT.[102,110,218]

CARE COORDINATION AND PRACTICE IMPLICATIONS

Based on a recommendation from the Institute of Medicine (IOM), treating specialists should provide survivorship care plans that include treatment summaries and posttreatment clinical follow-up recommendations to the primary care clinician to help coordinate this care.[3] Primary care clinicians should be aware that while oncology providers are increasingly providing survivorship care plans as per the IOM recommendation, new survivorship care planning accreditation requirements are being phased in by the American College of Surgeons Commission on Cancer.[219] Primary care clinicians and treating oncology specialists should confer regarding the survivorship care plan components and determine roles and responsibilities that are appropriate for the patient's condition and the resources available in the primary care setting. Primary care clinicians should maintain their role as the general medical care coordinator throughout the spectrum of prostate cancer detection, treatment, and aftercare, focusing on preventive care and the management of preexisting comorbid conditions, and regularly addressing the patient's overall physical and psychological status and those components of survivorship care that are mutually agreed upon with the primary treating specialist (Table 7).

In addition, providing the primary care clinician with a baseline patient-reported measure of side effect burden offers a meaningful contribution to the transfer of care. Use of the EPIC-CP (a one-page clinical tool to measure urinary, bowel, sexual, and vitality/hormonal health among survivors of prostate cancer) (Fig. 4)[95,220] may be helpful in initiating the discussion of prostate cancer HRQOL outcomes and expectations for management, improvement, and referral. Assessing these long-term and late effects of prostate cancer and its treatment (eg, urinary, bowel, sexual, and relationship effects) at least annually is warranted. It is recommended that primary treating specialists continue to coordinate care with primary care clinicians to address the long-term physical and psychosocial effects of prostate cancer, with the degree of primary care clinician involvement tailored to the clinician's level of experience and comfort with survivorship

Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP)

A Clinical Tool to Measure Urinary, Bowel, Sexual and Vitality/Hormonal Health **Date:** ___ /___ /___

Patients: Please answer the following questions by checking the appropriate checkbox. All questions are about your health and symptoms in the **LAST FOUR WEEKS**. Select one answer for each question.

1. Overall, how much of a problem has your urinary function been for you?
☐ No problem ☐ Very small problem ☐ Small problem ☐ Moderate problem ☐ Big problem

2. Which of the following best describes your urinary control?
0 ☐ Total control 1 ☐ Occasional dribbling 2 ☐ Frequent dribbling 4 ☐ No urinary control ____

3. How many pads or adult diapers per day have you been using for urinary leakage?
0 ☐ None 1 ☐ One pad per day 2 ☐ Two pads per day 4 ☐ Three or more pads per day ____

4. How big a problem, if any, has urinary dripping or leakage been for you?
0 ☐ No problem 1 ☐ Very small problem 2 ☐ Small problem 3 ☐ Moderate problem 4 ☐ Big problem ____

*CLINICIANS: ADD the answers from questions **2-4** to calculate the **Urinary Incontinence Symptom Score (out of 12):*** ☐

5. How big a problem, if any, has each of the following been for you?	**No problem**	**Very small problem**	**Small problem**	**Moderate problem**	**Big problem**	
a. Pain or burning with urination	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	____
b. Weak urine stream/incomplete bladder emptying	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	____
c. Need to urinate frequently	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	____

*CLINICIANS: ADD the answers from questions **5a-5c** to calculate the **Urinary Irritation/Obstruction Symptom Score (out of 12):*** ☐

6. How big a problem, if any, has each of the following been for you?	**No problem**	**Very small problem**	**Small problem**	**Moderate problem**	**Big problem**	
a. Rectal pain or urgency of bowel movements	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	____
b. Increased frequency of your bowel movements	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	____
c. Overall problems with your bowel habits	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	____

*CLINICIANS: ADD the answers from questions **6a-6c** to calculate the **Bowel Symptom Score (out of 12):*** ☐

7. How would you rate your ability to reach orgasm (climax)?
0 ☐ Very good 1 ☐ Good 2 ☐ Fair 3 ☐ Poor 4 ☐ Very poor to none ____

8. How would you describe the usual quality of your erections?
0 ☐ Firm enough for intercourse 1 ☐ Firm enough for masturbation and foreplay only 2 ☐ Not firm enough for any sexual activity 4 ☐ None at all ____

9. Overall, how much of a problem has your sexual function or lack of sexual function been for you?
0 ☐ No problem 1 ☐ Very small problem 2 ☐ Small problem 3 ☐ Moderate problem 4 ☐ Big problem ____

*CLINICIANS: ADD the answers from questions **7-9** to calculate the **Sexual Symptom Score (out of 12):*** ☐

10. How big a problem, if any, has each of the following been for you?	**No problem**	**Very small problem**	**Small problem**	**Moderate problem**	**Big problem**	
a. Hot flashes or breast tenderness/enlargement	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	____
b. Feeling depressed	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	____
c. Lack of energy	0 ☐	1 ☐	2 ☐	3 ☐	4 ☐	____

*CLINICIANS: ADD the answers from questions **10a-10c** to calculate the **Vitality/Hormonal Symptom Score (out of 12):*** ☐

*CLINICIANS: Add the five domain summary scores to calculate the **Overall Prostate Cancer QOL Score** (out of 60):* ☐

FIGURE 4. Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP). As survivorship after prostate cancer diagnosis continues to improve with advances in detection and treatment, the effects of treatment on health-related quality of life are becoming increasingly important. The changes in quality of life for each prostate cancer treatment modality are well recognized, but the objective characterization and quantification of such changes are challenging. A validated tool specifically for prostate cancer patients, one that would be practical for use in both community and academic clinical practices, has not yet been realized. Hence, we set out to develop and validate a relatively brief and accessible quality of life instrument designed specifically for use in the routine clinical care of prostate cancer patients. This instrument is called EPIC-CP, which stands for Expanded Prostate Cancer Index Composite for Clinical Practice. Reprinted with permission from Chang P, Szymanski KM, Dunn RL, et al. Expanded prostate cancer index composite for clinical practice: development and validation of a practical health related quality of life instrument for use in the routine clinical care of patients with prostate cancer. *J Urol*. 2011;186:865-872.[95]

care, and the severity of effects.[2,42,95,221] Moreover, discussion of side effect management goals with the survivor may help inform appropriate referrals to specialists.

Primary care clinicians should manage ongoing care and detect any new physical and psychosocial effects resulting from prostate cancer or its treatment. Health promotion and aggressive management of comorbid conditions should be routine aspects of care for prostate cancer survivors given their favorable cancer-specific survival. Primary care clinicians should continue other ACS-recommended cancer screening for the early detection of new primary cancers. In addition, clinicians should capture the patient's family history to better understand familial risk factors that might be associated with second primary cancers and comorbid conditions. The American Society of Clinical Oncology recommends that, at a minimum, the following information be obtained on first-degree and second-degree relatives: type of primary cancer(s), age at diagnosis, lineage (maternal/paternal), ethnicity, and results of any cancer genetic testing in any relative.[222]

LIMITATIONS

Several limitations to these guidelines should be noted. First, the evidence base in prostate cancer survivorship research is largely observational and based on small sample sizes with variability in methodology and measurement of outcomes. This lack of evidence limits our knowledge of the prevalence of long-term and late effects among prostate cancer survivors as well as the best approaches to care. Expert clinical practice-based opinion and multidisciplinary consensus drove many of the recommendations. There are opportunities to improve the knowledge base with respect to many of the survivorship domains and refine evidence-based care for prostate cancer survivors. Nonetheless, the recommendations contained herein and their subsequent implementation are steps forward for prostate cancer survivors and their clinicians. Second, the guideline writing process did not include an independent systematic evidence review. However, the rigorous literature reviews, followed by synthesizing evidence with expert clinical practice-based consensus, have led to an evidence-based set of recommendations. The guidelines were vetted by the multidisciplinary expert panel and ACS leadership to ensure they meet the high standards for ACS endorsement and to appropriately direct survivorship care. External review and comment by oncologists, urologists, and primary care clinicians were conducted prior to submission for publication. Lastly, guideline development and dissemination in the literature are only the initial steps in improving the delivery of survivorship care. For this reason, The Survivorship Center continues to work to make these guidelines and their derivatives easy to use and readily accessible to clinicians during clinical care so that they can more confidently manage the care of cancer survivors into long-term survival.

SUMMARY

The ACS Prostate Cancer Survivorship Care Guidelines address health promotion, surveillance for prostate cancer recurrence, screening for second primary cancers, physical and psychosocial long-term and late effects assessment and management, care coordination, and implications for clinical practice. The guidelines were developed through a systematic process that included an expert review panel composed of multidisciplinary experts specializing in the care of patients with prostate cancer and the treatment of long-term and late effects experienced by prostate cancer survivors. These guidelines are intended to support primary care clinicians caring for men faced with prostate cancer and its sequelae. The dissemination and implementation of these guidelines into clinical practice will be a step forward to improve the delivery of prostate cancer survivorship care.

AMERICAN CANCER SOCIETY 2012-2014 PROSTATE CANCER SURVIVORSHIP CARE GUIDELINES EXPERT WORKGROUP

Volunteer Members: Jeanny B. Aragon-Ching, MD (Assistant Professor of Medicine, Division of Hematology and Oncology, George Washington University Medical Center, Washington, DC); Lisa C. Campbell, PhD (Assistant Professor, Department of Psychology, East Carolina University, Greenville, NC); Gerald Chodak, MD (Highland Beach, FL); Carol Garlinghouse, RN, MSN (Nurse Consultant, Michigan Public Health Institute, Lansing, MI); Paul A. Godley, MD, PhD, MPP (Professor in the Division of Hematology/Oncology, University of North Carolina at Chapel Hill, Chapel Hill, NC); Michael A. Hoyt, PhD (Clinical Psychologist, Department of Psychology, Hunter College, City University of New York, New York, NY); Brian M. Rivers, PhD, MPH (Assistant Member Faculty Research, Department of Health Outcomes and Behavior, Moffitt Cancer Center, Tampa, FL); Andrew L. Salner, MD (Director, Helen and Harry Gray Cancer Center and Chief, Department of Radiation Oncology, Hartford Hospital, Hartford, CT); Victoria J. Sinibaldi, CRNP (Research Associate, Faculty, Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins, Baltimore, MD); Ted A. Skolarus, MD, MPH (Assistant Professor of Urology, Department of Urology, University of Michigan, Research Investigator, HSR&D Center for Clinical Management Research, VA Ann Arbor Healthcare System, Ann Arbor, MI); Susan F. Slovin, MD, PhD (Attending Physician, Genitourinary Oncology Service, Sidney Kimmel Center for Prostate and Urologic Cancer, Memorial Sloan-Kettering Cancer Center, New York, NY); Willie Underwood III, MD, MPH, MSci (Associate Professor, Department of Urology, Roswell Park Cancer Institute, Buffalo, NY); Daniela A. Wittmann, PhD, MSW, CST (Assistant Professor of Urology, Adjunct

Assistant Professor of Social Work, University of Michigan, Ann Arbor, MI); Andrew M.D. Wolf, MD (Associate Professor of Medicine, University of Virginia Health Systems, Charlottesville, VA); Michael J. Zelefsky, MD (Professor of Radiation Oncology, Chief, Brachytherapy Service, Memorial Sloan-Kettering Cancer Center, New York, NY); and Mandi L. Pratt-Chapman, MA, Director, The GW Cancer Institute, George Washington University, Washington, DC). American Cancer Society staff members: Durado D. Brooks, MD, MPH (Director, Prostate and Colorectal Cancers, Atlanta, GA); Rebecca L. Cowens-Alvarado, MPH (Director, Cancer Control Mission Strategy, Atlanta, GA); Nicole L. Erb, BA (Program Manager, National Cancer Survivorship Resource Center, Atlanta, GA); and Katherine Sharpe, MTS (Vice President, Health Systems, Atlanta, GA). ■

References

1. Siegel R, DeSantis C, Virgo K, et al. Cancer treatment and survivorship statistics, 2012. *CA: Cancer J Clin*. 2012;62:220-241.
2. Ganz PA. Survivorship: adult cancer survivors. *Prim Care*. 2009;36:721-741.
3. Hewitt M, Greenfield S, Stoval E, et al. From Cancer Patient to Cancer Survivor: Lost in Transition. Washington, DC: National Academies Press; 2006.
4. Cowens-Alvarado R, Sharpe K, Pratt-Chapman M, et al. Advancing survivorship care through the National Cancer Survivorship Resource Center: developing American Cancer Society guidelines for primary care providers. *CA Cancer J Clin*. 2013;63:147-150.
5. Carter HB. American Urological Association (AUA) guideline on prostate cancer detection: process and rationale. *BJU Int*. 2013;112:543-547.
6. Moyer VA; U.S. Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2012; 157:120-134.
7. Wolf AM, Wender RC, Etzioni RB, et al. American Cancer Society guideline for the early detection of prostate cancer: update 2010. *CA Cancer J Clin*. 2010;60:70-98.
8. Etzioni R, Gulati R, Tsodikov A, et al. The prostate cancer conundrum revisited: treatment changes and prostate cancer mortality declines. *Cancer*. 2012;118:5955-5963.
9. Draisma G, Etzioni R, Tsodikov A, et al. Lead time and overdiagnosis in prostate-specific antigen screening: importance of methods and context. *J Natl Cancer Inst*. 2009;101:374-383.
10. Chamie K, Connor SE, Maliski SL, Fink A, Kwan L, Litwin MS. Prostate cancer survivorship: lessons from caring for the uninsured. *Urol Oncol*. 2012;30:102-108.
11. Shi Q, Smith TG, Michonski JD, Stein KD, Kaw C, Cleeland CS. Symptom burden in cancer survivors 1 year after diagnosis: a report from the American Cancer Society's Studies of Cancer Survivors. *Cancer*. 2011; 117:2779-2790.
12. Ramsey SD, Zeliadt SB, Hall IJ, Ekwueme DU, Penson DF. On the importance of race, socioeconomic status and comorbidity when evaluating quality of life in men with prostate cancer. *J Urol*. 2007;177:1992-1999.
13. Cooperberg MR, Broering JM, Carroll PR. Time trends and local variation in primary treatment of localized prostate cancer. *J Clin Oncol*. 2010;28:1117-1123.
14. Dall'era MA, Hosang N, Konety B, Cowan JE, Carroll PR. Sociodemographic predictors of prostate cancer risk category at diagnosis: unique patterns of significant and insignificant disease. *J Urol*. 2009;181: 1622-1627; discussion 1627.
15. The Dartmouth Atlas of Health Care. dartmouthatlas.org/keyissues/issue.aspx?con=2938. Accessed April 7, 2014.
16. Latini DM, Elkin EP, Cooperberg MR, Sadetsky N, Duchane J, Carroll PR. Differences in clinical characteristics and disease-free survival for Latino, African American, and non-Latino white men with localized prostate cancer: data from CaPSURE. *Cancer*. 2006;106:789-795.
17. Porten SP, Richardson DA, Odisho AY, McAninch JW, Carroll PR, Cooperberg MR. Disproportionate presentation of high risk prostate cancer in a safety net health system. *J Urol*. 2010;184:1931-1936.
18. Brawley OW. Prostate cancer epidemiology in the United States. *World J Urol*. 2012;30:195-200.
19. Penner LA, Eggly S, Griggs JJ, Underwood W 3rd, Orom H, Albrecht TL. Life-threatening disparities: the treatment of black and white cancer patients. *J Soc Issues*. 2012;68(2).
20. Underwood W 3rd, Jackson J, Wei JT, et al. Racial treatment trends in localized/regional prostate carcinoma: 1992-1999. *Cancer*. 2005;103:538-545.
21. Edwards BK, Noone AM, Mariotto AB, et al. Annual Report to the Nation on the status of cancer, 1975-2010, featuring prevalence of comorbidity and impact on survival among persons with lung, colorectal, breast, or prostate cancer. *Cancer*. 2014;120:1290-1314.
22. American Cancer Society. Prostate cancer: expectant management (watchful waiting) and active surveillance for prostate cancer. cancer.org/cancer/prostatecancer/detailedguide/prostate-cancer-treating-watchful-waiting. Accessed April 4, 2014.
23. Dall"Era MA, Cooperberg MR, Chan JM, et al. Active surveillance for early-stage prostate cancer: review of the current literature. *Cancer*. 2008;112:1650-1659.
24. Filson CP, Schroeck FR, Ye Z, Wei JT, Hollenbeck BK, Miller DC. Variation in use of active surveillance among men undergoing expectant management for early-stage prostate cancer [published online ahead of print February 8, 2014]. *J Urol*. pii: S0022-5347(14)00230-4. doi: 10.1016/j.juro. 2014.01.105.
25. Harrop JP, Dean JA, Paskett ED. Cancer survivorship research: a review of the literature and summary of current NCI-designated cancer center projects. *Cancer Epidemiol Biomarkers Prev*. 2011;20:2042-2047.
26. Darwish-Yassine M, Berenji M, Wing D, et al. Evaluating long-term patient-centered outcomes following prostate cancer treatment: findings from the Michigan Prostate Cancer Survivor study. *J Cancer Surviv*. 2014;8:121-130.
27. Gore JL, Kwan L, Lee SP, Reiter RE, Litwin MS. Survivorship beyond convalescence: 48-month quality-of-life outcomes after treatment for localized prostate cancer. *J Natl Cancer Inst*. 2009;101:888-892.
28. Michaelson MD, Cotter SE, Gargollo PC, Zietman AL, Dahl DM, Smith MR. Management of complications of prostate cancer treatment. *CA Cancer J Clin*. 2008;58: 196-213.
29. Resnick MJ, Koyama T, Fan KH, et al. Long-term functional outcomes after treatment for localized prostate cancer. *N Engl J Med*. 2013;368:436-445.
30. Sanda MG, Dunn RL, Michalski J, et al. Quality of life and satisfaction with outcome among prostate-cancer survivors. *N Engl J Med*. 2008;358:1250-1261.
31. Grunfeld EA, Drudge-Coates L, Rixon L, Eaton E, Cooper AF. "The only way I know how to live is to work": a qualitative study of work following treatment for prostate cancer. *Health Psychol*. 2013;32:75-82.
32. Reeve BB, Chen RC, Moore DT, et al. Impact of comorbidity on health-related quality of life after prostate cancer treatment: combined analysis of two prospective cohort studies [published online ahead of print March 3, 2014]. *BJU Int*. doi: 10.1111/bju.12723.
33. Hu JC, Kwan L, Krupski TL, et al. Determinants of treatment regret in low-income, uninsured men with prostate cancer. *Urology*. 2008;72:1274-1279.
34. Schroeck FR, Krupski TL, Sun L, et al. Satisfaction and regret after open retropubic or robot-assisted laparoscopic radical prostatectomy. *Eur Urol*. 2008;54:785-793.
35. Collingwood SA, McBride RB, Leapman M, et al. Decisional regret after robotic-assisted laparoscopic prostatectomy is higher in African American men [published online ahead of print January 9, 2014]. *Urol Oncol*.
36. Johnson TK, Gilliland FD, Hoffman RM, et al. Racial/ethnic differences in functional outcomes in the 5 years after diagnosis of localized prostate cancer. *J Clin Oncol*. 2004;22:4193-4201.
37. Krupski TL, Kwan L, Afifi AA, Litwin MS. Geographic and socioeconomic variation in the treatment of prostate cancer. *J Clin Oncol*. 2005;23:7881-7888.
38. Singh J, Trabulsi EJ, Gomella LG. The quality-of-life impact of prostate cancer treatments. *Curr Urol Rep*. 2010;11:139-146.
39. Kleinmann N, Zaorsky NG, Showalter TN, Gomella LG, Lallas CD, Trabulsi EJ. The

effect of ethnicity and sexual preference on prostate-cancer-related quality of life. *Nat Rev Urol*. 2012;9:258-265.

40. National Comprehensive Cancer Network, Inc. NCCN clinical practice guidelines in oncology (NCCN Guideline®): prostate cancer, version 1.2014. nccn.org/professionals/physician_gls/pdf/prostate.pdf. Accessed April 1, 2013.
41. National Comprehensive Cancer Network, Inc. NCCN clinical practice guidelines in oncology (NCCN Guideline®): survivorship, version 1.2014. nccn.org/professionals/physician_gls/pdf/survivorship.pdf. Accessed May 20, 2013.
42. Cheung WY, Neville BA, Cameron DB, Cook EF, Earle CC. Comparisons of patient and physician expectations for cancer survivorship care. *J Clin Oncol*. 2009;27:2489-2495.
43. Chubak J, Aiello Bowles EJ, Tuzzio L, et al. Perspectives of cancer survivors on the role of different healthcare providers in an integrated delivery system [published online ahead of print December 19, 2013]. *J Cancer Surviv*.
44. Chubak J, Tuzzio L, Hsu C, et al. Providing care for cancer survivors in integrated health care delivery systems: practices, challenges, and research opportunities. *J Oncol Pract*. 2012;8:184-189.
45. Klabunde CN, Han PK, Earle CC, et al. Physician roles in the cancer-related follow-up care of cancer survivors. *Fam Med*. 2013;45:463-474.
46. Potosky AL, Han PK, Rowland J, et al. Differences between primary care physicians' and oncologists' knowledge, attitudes and practices regarding the care of cancer survivors. *J Gen Intern Med*. 2011;26:1403-1410.
47. Skolarus TA, Miller DC, Zhang Y, Hollingsworth JM, Hollenbeck BK. The delivery of prostate cancer care in the United States: implications for delivery system reform. *J Urol*. 2010;184:2279-2284.
48. Lance Armstrong Foundation. A National Action Plan for Cancer Survivorship: Advancing Public Health Strategies. Austin, TX: Lance Armstrong Foundation; 2004. livestrong.org/What-We-Do/Our-Approach/Platforms-Priorities/National-Action-Plan. Accessed April 9, 2014.
49. National Comprehensive Cancer Network, Inc. NCCN clinical practice guidelines in oncology: distress management, version 2.2013. NCCN.org. Accessed May 22, 2013.
50. Michigan Cancer Consortium Prostate Cancer Action Committee. Michigan Cancer Consortium recommendations for prostate cancer survivorship care. prostatecancerdecision.org/providers.htm. Accessed September 13, 2012.
51. The University of Texas MD Anderson Cancer Center. Survivorship-prostate cancer, version 3. mdanderson.org/education-and-research/resources-for-professionals/clinical-tools-and-resources/practice-algorithms/survivorship-prostate-web-algorithm.pdf. Accessed April 7, 2014.
52. Brawley O, Byers T, Chen A, et al. New American Cancer Society process for creating trustworthy cancer screening guidelines. *JAMA*. 2011;306:2495-2499.
53. Rock CL, Doyle C, Demark-Wahnefried W, et al. Nutrition and physical activity guidelines for cancer survivors. *CA Cancer J Clin*. 2012;62:243-274.
54. Galbraith ME, Hays L, Tanner T. What men say about surviving prostate cancer: complexities represented in a decade of comments. *Clin J Oncol Nurs*. 2012;16:65-72.
55. McInnes DK, Cleary PD, Stein KD, Ding L, Mehta CC, Ayanian JZ. Perceptions of cancer-related information among cancer survivors: a report from the American Cancer Society's Studies of Cancer Survivors. *Cancer*. 2008;113:1471-1479.
56. Weaver KE, Foraker RE, Alfano CM, et al. Cardiovascular risk factors among long-term survivors of breast, prostate, colorectal, and gynecologic cancers: a gap in survivorship care? *J Cancer Surviv*. 2013;7:253-261.
57. Chan JM, Van Blarigan EL, Kenfield SA. What should we tell prostate cancer patients about (secondary) prevention? *Curr Opin Urol*. 2014;24:318-323.
58. Amling CL, Riffenburgh RH, Sun L, et al. Pathologic variables and recurrence rates as related to obesity and race in men with prostate cancer undergoing radical prostatectomy. *J Clin Oncol*. 2004;22:439-445.
59. Cao Y, Ma J. Body mass index, prostate cancer-specific mortality, and biochemical recurrence: a systematic review and meta-analysis. *Cancer Prev Res (Phila)*. 2011;4:486-501.
60. Demark-Wahnefried W, Platz EA, Ligibel JA, et al. The role of obesity in cancer survival and recurrence. *Cancer Epidemiol Biomarkers Prev*. 2012;21:1244-1259.
61. Freedland SJ, Aronson WJ, Kane CJ, et al. Impact of obesity on biochemical control after radical prostatectomy for clinically localized prostate cancer: a report by the Shared Equal Access Regional Cancer Hospital database study group. *J Clin Oncol*. 2004;22:446-453.
62. Hu MB, Xu H, Bai PD, Jiang HW, Ding Q. Obesity has multifaceted impact on biochemical recurrence of prostate cancer: a dose-response meta-analysis of 36,927 patients. *Med Oncol*. 2014;31:829.
63. Demark-Wahnefried W, Morey MC, Sloane R, et al. Reach out to enhance wellness home-based diet-exercise intervention promotes reproducible and sustainable long-term improvements in health behaviors, body weight, and physical functioning in older, overweight/obese cancer survivors. *J Clin Oncol*. 2012;30:2354-2361.
64. Kenfield SA, Stampfer MJ, Giovannucci E, Chan JM. Physical activity and survival after prostate cancer diagnosis in the health professionals follow-up study. *J Clin Oncol*. 2011;29:726-732.
65. Santa Mina D, Guglietti CL, Alibhai SM, et al. The effect of meeting physical activity guidelines for cancer survivors on quality of life following radical prostatectomy for prostate cancer [published online ahead of print December 7, 2013]. *J Cancer Surviv*.
66. Thorsen L, Courneya KS, Stevinson C, Fossa SD. A systematic review of physical activity in prostate cancer survivors: outcomes, prevalence, and determinants. *Support Care Cancer*. 2008;16:987-997.
67. Demark-Wahnefried W, Aziz NM, Rowland JH, Pinto BM. Riding the crest of the teachable moment: promoting long-term health after the diagnosis of cancer. *J Clin Oncol*. 2005;23:5814-5830.
68. Meyerhardt JA, Ma J, Courneya KS. Energetics in colorectal and prostate cancer. *J Clin Oncol*. 2010;28:4066-4073.
69. Tabuchi T, Ito Y, Ioka A, Nakayama T, Miyashiro I, Tsukuma H. Tobacco smoking and the risk of subsequent primary cancer among cancer survivors: a retrospective cohort study. *Ann Oncol*. 2013;24:2699-2704.
70. Moreira DM, Aronson WJ, Terris MK, et al. Cigarette smoking is associated with an increased risk of biochemical disease recurrence, metastasis, castration-resistant prostate cancer, and mortality after radical prostatectomy: results from the SEARCH database. *Cancer*. 2014;120:197-204.
71. Agency for Healthcare Research and Quality. Treating Tobacco Use and Dependence: 2008 Update. Rockville, MD; Agency for Healthcare Research and Quality; 2008. ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco/clinicians/update/treating_tobacco_use08.pdf. Accessed April 4, 2014.
72. Dinnes J, Hewison J, Altman DG, Deeks JJ. The basis for monitoring strategies in clinical guidelines: a case study of prostate-specific antigen for monitoring in prostate cancer. *Can Med Assoc J*. 2012;184:169-177.
73. Paller CJ, Antonarakis ES. Management of biochemically recurrent prostate cancer after local therapy: evolving standards of care and new directions. *Clin Adv Hematol Oncol*. 2013;11:14-23.
74. Skolarus TA, Holmes-Rovner M, Northouse LL, et al. Primary care perspectives on prostate cancer survivorship: implications for improving quality of care. *Urol Oncol*. 2013;31:727-732.
75. Underwood W 3rd, Orom H, Poch M, et al. Multiple physician recommendations for prostate cancer treatment: a Pandora's box for patients? *Can J Urol*. 2010;17:5346-5354.
76. Morgan TM, Meng MV, Cooperberg MR, et al. A risk-adjusted definition of biochemical recurrence after radical prostatectomy [published online ahead of print 2014]. *Prostate Cancer Prostatic Dis*. doi: 10.1038/pcan. 2014.5.
77. Stephenson AJ, Kattan MW, Eastham JA, et al. Defining biochemical recurrence of prostate cancer after radical prostatectomy: a proposal for a standardized definition. *J Clin Oncol*. 2006;24:3973-3978.
78. Roach M 3rd, Hanks G, Thames H Jr, et al. Defining biochemical failure following radiotherapy with or without hormonal therapy in men with clinically localized prostate cancer: recommendations of the RTOG-ASTRO Phoenix Consensus Conference. *Int J Radiat Oncol Biol Phys*. 2006;65:965-974.
79. Crook J, Gillan C, Yeung I, Austen L, McLean M, Lockwood G. PSA kinetics and PSA bounce following permanent seed prostate brachytherapy. *Int J Radiat Oncol Biol Phys*. 2007;69:426-433.
80. Mehta NH, Kamrava M, Wang PC, Steinberg M, Demanes J. Prostate-specific antigen bounce after high-dose-rate monotherapy for prostate cancer. *Int J Radiat Oncol Biol Phys*. 2013;86:729-733.
81. Thompson A, Keyes M, Pickles T, et al. Evaluating the Phoenix definition of biochemical failure after (125)I prostate

brachytherapy: can PSA kinetics distinguish PSA failures from PSA bounces? *Int J Radiat Oncol Biol Phys*. 2010;78: 415-421.

82. Hussain M, Tangen CM, Higano C, et al. Absolute prostate-specific antigen value after androgen deprivation is a strong independent predictor of survival in new metastatic prostate cancer: data from Southwest Oncology Group Trial 9346 (INT-0162). *J Clin Oncol*. 2006;24:3984-3990.

83. Malik R, Jani AB, Liauw SL. Prostate-specific antigen halving time while on neoadjuvant androgen deprivation therapy is associated with biochemical control in men treated with radiation therapy for localized prostate cancer. *Int J Radiat Oncol Biol Phys*. 2011;79:1022-1028.

84. Murray L, Henry A, Hoskin P, Siebert FA, Venselaar J; PROBATE group of the GEC ESTRO. Second primary cancers after radiation for prostate cancer: a systematic review of the clinical data and impact of treatment technique. *Radiother Oncol*. 2014;110:213-228.

85. Musunuru H, Mason M, Murray L, et al. Second primary cancers occurring after I-125 brachytherapy as monotherapy for early prostate cancer. *Clin Oncol (R Coll Radiol)*. 2014;26:210-215.

86. Sountoulides P, Koletsas N, Kikidakis D, Paschalidis K, Sofikitis N. Secondary malignancies following radiotherapy for prostate cancer. *Ther Adv Urol*. 2010;2:119-125.

87. Baxter NN, Tepper JE, Durham SB, Rothenberger DA, Virnig BA. Increased risk of rectal cancer after prostate radiation: a population-based study. *Gastroenterology*. 2005;128:819-824.

88. Margel D, Baniel J, Wasserberg N, Bar-Chana M, Yossepowitch O. Radiation therapy for prostate cancer increases the risk of subsequent rectal cancer. *Ann Surg*. 2011;254:947-950.

89. Nieder AM, Porter MP, Soloway MS. Radiation therapy for prostate cancer increases subsequent risk of bladder and rectal cancer: a population based cohort study. *J Urol*. 2008;180:2005-2009; discussion 2009-2010.

90. Reeve BB, Stover AM, Jensen RE, et al. Impact of diagnosis and treatment of clinically localized prostate cancer on health-related quality of life for older Americans: a population-based study. *Cancer*. 2012; 118:5679-5687.

91. Cappelleri JC, Rosen RC. The Sexual Health Inventory for Men (SHIM): a 5-year review of research and clinical experience. *Int J Impot Res*. 2005;17:307-319.

92. Rhoden EL, Telöken C, Sogari PR, Vargas Souto CA. The use of the simplified International Index of Erectile Function (IIEF-5) as a diagnostic tool to study the prevalence of erectile dysfunction. *Int J Impot Res*. 2002;14:245-250.

93. Rosen RC, Cappelleri JC, Smith MD, Lipsky J, Peña BM. Development and evaluation of an abridged, 5-item version of the International Index of Erectile Function (IIEF-5) as a diagnostic tool for erectile dysfunction. *Int J Impot Res*. 1999;11: 319-326.

94. Bayraktar Z, Atun AI. Despite some comprehension problems the International Index of Erectile Function is a reliable questionnaire in erectile dysfunction. *Urol Int*. 2012;88:170-176.

95. Chang P, Szymanski KM, Dunn RL, et al. Expanded prostate cancer index composite for clinical practice: development and validation of a practical health related quality of life instrument for use in the routine clinical care of patients with prostate cancer. *J Urol*. 2011;186:865-872.

96. Szymanski KM, Wei JT, Dunn RL, Sanda MG. Development and validation of an abbreviated version of the expanded prostate cancer index composite instrument for measuring health-related quality of life among prostate cancer survivors. *Urology*. 2010;76:1245-1250.

97. Grossmann M, Zajac JD. Management of side effects of androgen deprivation therapy. *Endocrinol Metab Clin North Am* 2011;40:655-671.

98. Grossmann M, Zajac JD. Hematological changes during androgen deprivation therapy. *Asian J Androl*. 2012;14:187-192.

99. Do NL, Nagle D, Poylin VY. Radiation proctitis: current strategies in management. *Gastroenterol Res Pract* 2011;2011: 917941.

100. Richter JM, Kushkuley S, Barrett JA, Oster G. Treatment of new-onset ulcerative colitis and ulcerative proctitis: a retrospective study. *Aliment Pharmacol Ther*. 2012;36: 248-256.

101. Hampson NB, Holm JR, Wreford-Brown CE, Feldmeier J. Prospective assessment of outcomes in 411 patients treated with hyperbaric oxygen for chronic radiation tissue injury. *Cancer*. 2012;118:3860-3868.

102. Grossmann M, Zajac JD. Androgen deprivation therapy in men with prostate cancer: how should the side effects be monitored and treated? *Clin Endocrinol (Oxf)*. 2011;74:289-293.

103. Taylor LG, Canfield SE, Du XL. Review of major adverse effects of androgen-deprivation therapy in men with prostate cancer. *Cancer*. 2009;115:2388-2399.

104. Efstathiou JA, Bae K, Shipley WU, et al. Cardiovascular mortality after androgen deprivation therapy for locally advanced prostate cancer: RTOG 85-31. *J Clin Oncol*. 2009;27:92-99.

105. Efstathiou JA, Bae K, Shipley WU, et al. Cardiovascular mortality and duration of androgen deprivation for locally advanced prostate cancer: analysis of RTOG 92-02. *Eur Urol*. 2008;54:816-823.

106. Roach M 3rd, Bae K, Speight J, et al. Short-term neoadjuvant androgen deprivation therapy and external-beam radiotherapy for locally advanced prostate cancer: long-term results of RTOG 8610. *J Clin Oncol*. 2008;26:585-591.

107. Saylor PJ, Smith MR. Metabolic complications of androgen deprivation therapy for prostate cancer. *J Urol*. 2013;189(suppl 1): S34-S42; discussion S43-S44.

108. Tsai HK, D'Amico AV, Sadetsky N, Chen MH, Carroll PR. Androgen deprivation therapy for localized prostate cancer and the risk of cardiovascular mortality. *J Natl Cancer Inst*. 2007;99:1516-1524.

109. Nguyen PL, Je Y, Schutz FA, et al. Association of androgen deprivation therapy with cardiovascular death in patients with prostate cancer: a meta-analysis of randomized trials. *JAMA*. 2011;306:2359-2366.

110. Ahmadi H, Daneshmand S. Androgen deprivation therapy: evidence-based management of side effects. *BJU Int*. 2013;111: 543-548.

111. Levine GN, D'Amico AV, Berger P, et al; American Heart Association Council on Clinical Cardiology and Council on Epidemiology and Prevention, the American Cancer Society; and the American Urological Association. Androgen-deprivation therapy in prostate cancer and cardiovascular risk: a science advisory from the American Heart Association, American Cancer Society, and American Urological Association: endorsed by the American Society for Radiation Oncology. *CA Cancer J Clin*. 2010;60:194-201.

112. Collins L, Basaria S. Adverse effects of androgen deprivation therapy in men with prostate cancer: a focus on metabolic and cardiovascular complications. *Asian J Androl*. 2012;14:222-225.

113. Weber BA, Sherwill-Navarro P. Psychosocial consequences of prostate cancer: 30 years of research. *Geriat Nurs*. 2005;26: 166-175.

114. Zenger M, Lehmann-Laue A, Stolzenburg JU, Schwalenberg T, Ried A, Hinz A. The relationship of quality of life and distress in prostate cancer patients compared to the general population. *Psychosoc Med*. 2010;7:Doc02.

115. Carlson LE, Angen M, Cullum J, et al. High levels of untreated distress and fatigue in cancer patients. *Br J Cancer*. 2004;90:2297-2304.

116. Jayadevappa R, Malkowicz SB, Chhatre S, Johnson JC, Gallo JJ. The burden of depression in prostate cancer. *Psychooncology*. 2012;21:1338-1345.

117. Korfage IJ, Essink-Bot ML, Janssens AC, Schroder FH, de Koning HJ. Anxiety and depression after prostate cancer diagnosis and treatment: 5-year follow-up. *Br J Cancer*. 2006;94:1093-1098.

118. Punnen S, Cowan JE, Dunn LB, Shumay DM, Carroll PR, Cooperberg MR. A longitudinal study of anxiety, depression and distress as predictors of sexual and urinary quality of life in men with prostate cancer. *BJU Int*. 2013;112:E67-E75.

119. Anguiano L, Mayer DK, Piven ML, Rosenstein D. A literature review of suicide in cancer patients. *Cancer Nurs*. 2012; 35:E14-E26.

120. Misono S, Weiss NS, Fann JR, Redman M, Yueh B. Incidence of suicide in persons with cancer. *J Clin Oncol*. 2008;26:4731-4738.

121. Monahan PO, Champion V, Rawl S, et al. What contributes more strongly to predicting QOL during 1-year recovery from treatment for clinically localized prostate cancer: 4-weeks-post-treatment depressive symptoms or type of treatment? *Qual Life Res*. 2007;16:399-411.

122. Norris L, Pratt-Chapman M; Noblick JA, Cowens-Alvarado R. Distress, demoralization, and depression in cancer survivorship. *Psychiatric Anals*. 2011;41:433–438.

123. Badger TA, Segrin C, Figueredo AJ, et al. Psychosocial interventions to improve quality of life in prostate cancer survivors and their intimate or family partners. *Qual Life Res*. 2011;20:833-844.

124. Traeger L, Cannon S, Keating NL, et al. Race by sex differences in depression symptoms and psychosocial service use among non-Hispanic black and white patients with lung cancer. *J Clin Oncol*. 2014;32:107-113.

125. Zhang AY, Gary F, Zhu H. What precipitates depression in African-American cancer patients? Triggers and stressors. *Palliat Support Care*. 2012;10:279-286.

126. Carlson LE, Groff SL, Maciejewski O, Bultz BD. Screening for distress in lung and breast cancer outpatients: a randomized controlled trial. *J Clin Oncol*. 2010;28:4884-4891.

127. Chambers SK, Zajdlewicz L, Youlden DR, Holland JC, Dunn J. The validity of the distress thermometer in prostate cancer populations. *Psychooncology*. 2014;23:195-203.

128. Mitchell AJ. Short screening tools for cancer-related distress: a review and diagnostic validity meta-analysis. *J Natl Compr Canc Netw*. 2010;8:487-494.

129. Watts S, Leydon G, Birch B, et al. Depression and anxiety in prostate cancer: a systematic review and meta-analysis of prevalence rates. *BMJ Open*. 2014;4:e003901.

130. Nelson CJ, Mulhall JP, Roth AJ. The association between erectile dysfunction and depressive symptoms in men treated for prostate cancer. *J Sex Med*. 2011;8:560-566.

131. Hart SL, Hoyt MA, Diefenbach M, et al. Meta-analysis of efficacy of interventions for elevated depressive symptoms in adults diagnosed with cancer. *J Natl Cancer Inst*. 2012;104:990-1004.

132. Meijer A, Roseman M, Delisle VC, et al. Effects of screening for psychological distress on patient outcomes in cancer: a systematic review. *J Psychosom Res*. 2013;75:1-17.

133. Casey RG, Corcoran NM, Goldenberg SL. Quality of life issues in men undergoing androgen deprivation therapy: a review. *Asian J Androl*. 2012;14:226-231.

134. Mohile SG, Mustian K, Bylow K, Hall W, Dale W. Management of complications of androgen deprivation therapy in the older man. *Crit Rev Oncol Hematol*. 2009;70:235-255.

135. Johansson E, Steineck G, Holmberg L, et al; SPCG-4 Investigators. Long-term quality-of-life outcomes after radical prostatectomy or watchful waiting: the Scandinavian Prostate Cancer Group-4 randomised trial. *Lancet Oncol*. 2011;12:891-899.

136. Kazer MW, Bailey DE Jr, Chipman J, et al. Uncertainty and perception of danger among patients undergoing treatment for prostate cancer. *BJU Int*. 2013;111(3 pt B):E84-E91.

137. Dale W, Bilir P, Han M, Meltzer D. The role of anxiety in prostate carcinoma: a structured review of the literature. *Cancer*. 2005;104:467-478.

138. Latini DM, Hart SL, Knight SJ, et al. The relationship between anxiety and time to treatment for patients with prostate cancer on surveillance. *J Urol*. 2007;178(3 pt 1):826-831; discussion 831-822.

139. Choong K, Basaria S. Emerging cardiometabolic complications of androgen deprivation therapy. *Aging Male*. 2010;13:1-9.

140. Eastham JA. Bone health in men receiving androgen deprivation therapy for prostate cancer. *J Urol*. 2007;177:17-24.

141. VanderWalde A, Hurria A. Aging and osteoporosis in breast and prostate cancer. *CA Cancer J Clin*. 2011;61:139-156.

142. Higano CS. Androgen-deprivation-therapy-induced fractures in men with nonmetastatic prostate cancer: what do we really know? *Nat Clin Pract Urol*. 2008;5:24-34.

143. Alibhai SM, Duong-Hua M, Cheung AM, et al. Fracture types and risk factors in men with prostate cancer on androgen deprivation therapy: a matched cohort study of 19,079 men. *J Urol*. 2010;184:918-923.

144. Shahinian VB, Kuo YF, Freeman JL, Goodwin JS. Risk of fracture after androgen deprivation for prostate cancer. *N Engl J Med*. 2005;352:154-164.

145. Shao YH, Moore DF, Shih W, Lin Y, Jang TL, Lu-Yao GL. Fracture after androgen deprivation therapy among men with a high baseline risk of skeletal complications. *BJU Int*. 2013;111:745-752.

146. Elliott SP, Jarosek SL, Alanee SR, Konety BR, Dusenbery KE, Virnig BA. Three-dimensional external beam radiotherapy for prostate cancer increases the risk of hip fracture. *Cancer*. 2011;117:4557-4565.

147. Freedland SJ, Humphreys EB, Mangold LA, et al. Risk of prostate cancer-specific mortality following biochemical recurrence after radical prostatectomy. *JAMA*. 2005;294:433-439.

148. Simmons MN, Stephenson AJ, Klein EA. Natural history of biochemical recurrence after radical prostatectomy: risk assessment for secondary therapy. *Eur Urol*. 2007;51:1175-1184.

149. Gralow JR, Biermann JS, Farooki A, et al. NCCN Task Force Report: Bone Health in Cancer Care. *J Natl Compr Cancer Netw*. 2009;7(suppl 3):S1-S32; quiz S33-S35.

150. Saylor PJ, Kaufman DS, Michaelson MD, Lee RJ, Smith MR. Application of a fracture risk algorithm to men treated with androgen deprivation therapy for prostate cancer. *J Urol*. 2010;183:2200-2205.

151. Saylor PJ, Smith MR. Bone health and prostate cancer. *Prostate Cancer Prostatic Dis*. 2010;13:20-27.

152. Watts NB, Adler RA, Bilezikian JP, et al; Endocrine Society. Osteoporosis in men: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2012;97:1802-1822.

153. Akbal C, Tinay I, Simsek F, Turkeri LN. Erectile dysfunction following radiotherapy and brachytherapy for prostate cancer: pathophysiology, prevention and treatment. *Int Urol Nephrol*. 2008;40:355-363.

154. Alemozaffar M, Regan MM, Cooperberg MR, et al. Prediction of erectile function following treatment for prostate cancer. *JAMA*. 2011;306:1205-1214.

155. Garcia FJ, Brock G. Current state of penile rehabilitation after radical prostatectomy. *Curr Opin Urol*. 2010;20:234-240.

156. Mulhall JP. Penile rehabilitation following radical prostatectomy. *Curr Opin Urol*. 2008;18:613-620.

157. Stember DS, Mulhall JP. The concept of erectile function preservation (penile rehabilitation) in the patient after brachytherapy for prostate cancer. *Brachytherapy*. 2012;11:87-96.

158. Bergman J, Gore JL, Penson DF, Kwan L, Litwin MS. Erectile aid use by men treated for localized prostate cancer. *J Urol*. 2009;182:649-654.

159. Brewer ME, Kim ED. Penile rehabilitation therapy with PDE-V inhibitors following radical prostatectomy: proceed with caution. *Adv Urol*. 2009:852437.

160. Hakky TS, Baumgarten AS, Parker J, et al. Penile rehabilitation: the evolutionary concept in the management of erectile dysfunction. *Curr Urol Rep*. 2014;15:393.

161. McCullough AR. Rehabilitation of erectile function following radical prostatectomy. *Asian J Androl*. 2008;10:61-74.

162. Aydogdu O, Gokce MI, Burgu B, Baltaci S, Yaman O. Tadalafil rehabilitation therapy preserves penile size after bilateral nerve sparing radical retropubic prostatectomy. *Int Braz J Urol*. 2011;37:336-344; discussion 344-346.

163. Basal S, Wambi C, Acikel C, Gupta M, Badani K. Optimal strategy for penile rehabilitation after robot-assisted radical prostatectomy based on preoperative erectile function. *BJU Int*. 2013;111:658-665.

164. Briganti A, Di Trapani E, Abdollah F, et al. Choosing the best candidates for penile rehabilitation after bilateral nerve-sparing radical prostatectomy. *J Sex Med*. 2012;9:608-617.

165. Shindel AW. 2009 update on phosphodiesterase type 5 inhibitor therapy part 1: recent studies on routine dosing for penile rehabilitation, lower urinary tract symptoms, and other indications (CME). *J Sex Med*. 2009;6:1794-1808; quiz 1793, 1809-1810.

166. Yuan J, Zhang R, Yang Z, et al. Comparative effectiveness and safety of oral phosphodiesterase type 5 inhibitors for erectile dysfunction: a systematic review and network meta-analysis. *Eur Urol*. 2013;63:902-912.

167. Mitchell SA, Jain RK, Laze J, Lepor H. Post-prostatectomy incontinence during sexual activity: a single center prevalence study. *J Urol*. 2011;186:982-985.

168. Nilsson AE, Carlsson S, Johansson E, et al. Orgasm-associated urinary incontinence and sexual life after radical prostatectomy. *J Sex Med*. 2011;8:2632-2639.

169. Eylert MF, Bahl A, Persad R. Do we need to obtain consent for penile shortening as a complication of treatment for organ-confined prostate cancer? *BJU Int*. 2012;110:1491-1500.

170. Brison D, Seftel A, Sadeghi-Nejad H. The resurgence of the vacuum erection device (VED) for treatment of erectile dysfunction. *J Sex Med*. 2013;10:1124-1135.

171. Pahlajani G, Raina R, Jones S, Ali M, Zippe C. Vacuum erection devices revisited: its emerging role in the treatment of erectile dysfunction and early penile rehabilitation following prostate cancer therapy. *J Sex Med*. 2012;9:1182-1189.

172. Yuan J, Hoang AN, Romero CA, Lin H, Dai Y, Wang R. Vacuum therapy in erectile dysfunction–science and clinical evidence. *Int J Impot Res*. 2010;22:211-219.

173. Porst H, Burnett A, Brock G, et al; ISSM Standards Committee for Sexual Medicine. SOP conservative (medical and mechanical) treatment of erectile dysfunction. *J Sex Med*. 2013;10:130-171.

174. Pardo Y, Guedea F, Aguilo F, et al. Quality-of-life impact of primary treatments for localized prostate cancer in patients without hormonal treatment. *J Clin Oncol*. 2010;28:4687-4696.

175. Hollenbeck BK, Dunn RL, Wei JT, Sandler HM, Sanda MG. Sexual health recovery after prostatectomy, external radiation, or brachytherapy for early stage prostate cancer. *Curr Urol Rep*. 2004;5:212-219.

176. Saylor PJ, Keating NL, Smith MR. Prostate cancer survivorship: prevention and treatment of the adverse effects of androgen deprivation therapy. *J Gen Intern Med*. 2009;24(suppl 2):S389-S394.

177. Higano CS. Sexuality and intimacy after definitive treatment and subsequent androgen deprivation therapy for prostate cancer. *J Clin Oncol*. 2012;30:3720-3725.

178. Pastuszak AW, Badhiwala N, Lipshultz LI, Khera M. Depression is correlated with the psychological and physical aspects of sexual dysfunction in men. *Int J Impot Res*. 2013;25:194-199.

179. De Sousa A, Sonavane S, Mehta J. Psychological aspects of prostate cancer: a clinical review. *Prostate Cancer Prostatic Dis*. 2012;15:120-127.

180. Wittmann D, Northouse L, Foley S, et al. The psychosocial aspects of sexual recovery after prostate cancer treatment. *Int J Impot Res*. 2009;21:99-106.

181. Taylor-Ford M, Meyerowitz BE, D'Orazio LM, Christie KM, Gross ME, Agus DB. Body image predicts quality of life in men with prostate cancer. *Psychooncology*. 2013;22:756-761.

182. Wassersug RJ, Lyons A, Duncan D, Dowsett GW, Pitts M. Diagnostic and outcome differences between heterosexual and nonheterosexual men treated for prostate cancer. *Urology*. 2013;82:565-571.

183. van den Bergh RC, Korfage IJ, Roobol MJ, et al. Sexual function with localized prostate cancer: active surveillance vs radical therapy. *BJU Int*. 2012;110:1032-1039.

184. Nelson CJ, Choi JM, Mulhall JP, Roth AJ. Determinants of sexual satisfaction in men with prostate cancer. *J Sex Med*. 2007;4:1422-1427.

185. Chambers SK, Schover L, Nielsen L, et al. Couple distress after localised prostate cancer. *Support Care Cancer*. 2013;21:2967-2976.

186. Eisemann N, Waldmann A, Rohde V, Katalinic A. Quality of life in partners of patients with localised prostate cancer [published online ahead of print December 8, 2013]. *Qual Life Res*.

187. Montorsi F, Padma-Nathan H, Glina S. Erectile function and assessments of erection hardness correlate positively with measures of emotional well-being, sexual satisfaction, and treatment satisfaction in men with erectile dysfunction treated with sildenafil citrate (Viagra). *Urology*. 2006;68(suppl 3):26-37.

188. Tanner T, Galbraith M, Hays L. From a woman's perspective: life as a partner of a prostate cancer survivor. *J Midwifery Womens Health*. 2011;56:154-160.

189. Garos S, Kluck A, Aronoff D. Prostate cancer patients and their partners: differences in satisfaction indices and psychological variables. *J Sex Med*. 2007;4:1394-1403.

190. Segrin C, Badger TA, Harrington J. Interdependent psychological quality of life in dyads adjusting to prostate cancer. *Health Psychol*. 2012;31:70-79.

191. Abraham NE, Makarov DV, Laze J, Stefanovics E, Desai R, Lepor H. Patient centered outcomes in prostate cancer treatment: predictors of satisfaction up to 2 years after open radical retropubic prostatectomy. *J Urol*. 2010;184:1977-1981.

192. Galbraith ME, Fink R, Wilkins GG. Couples surviving prostate cancer: challenges in their lives and relationships. *Semin Oncol Nurs*. 2011;27:300-308.

193. Schover LR, Canada AL, Yuan Y, et al. A randomized trial of internet-based versus traditional sexual counseling for couples after localized prostate cancer treatment. *Cancer*. 2012;118:500-509.

194. Wittmann D, Montie JE, Hamstra DA, Sandler H, Wood DP Jr. Counseling patients about sexual health when considering post-prostatectomy radiation treatment. *Int J Impot Res*. 2009;21:275-284.

195. Reese JB. Coping with sexual concerns after cancer. *Curr Opin Oncol*. 2011;23:313-321.

196. Reese JB, Keefe FJ, Somers TJ, Abernethy AP. Coping with sexual concerns after cancer: the use of flexible coping. *Support Care Cancer*. 2010;18:785-800.

197. Couper J, Bloch S, Love A, Macvean M, Duchesne GM, Kissane D. Psychosocial adjustment of female partners of men with prostate cancer: a review of the literature. *Psychooncology*. 2006;15:937-953.

198. Heins M, Schellevis F, Rijken M, Donker G, van der Hoek L, Korevaar J. Partners of cancer patients consult their GPs significantly more often with both somatic and psychosocial problems. *Scand J Prim Health Care*. 2013;31:203-208.

199. Resendes LA, McCorkle R. Spousal responses to prostate cancer: an integrative review. *Cancer Invest*. 2006;24:192-198.

200. Ko CM, Malcarne VL, Varni JW, et al. Problem-solving and distress in prostate cancer patients and their spousal caregivers. *Support Care Cancer*. 2005;13:367-374.

201. Harden J. Developmental life stage and couples' experiences with prostate cancer: a review of the literature. *Cancer Nurs*. 2005;28:85-98.

202. Tyson MD, Andrews PE, Etzioni DA, et al. Marital status and prostate cancer outcomes. *Can J Urol*. 2013;20:6702-6706.

203. Kopp RP, Marshall LM, Wang PY, et al. The burden of urinary incontinence and urinary bother among elderly prostate cancer survivors. *Eur Urol*. 2013;64:672-679.

204. Radomski SB. Practical evaluation of post-prostatectomy incontinence. *Can Urol Assoc J*. 2013;7(9-10 suppl 4):S186-S188.

205. Sandhu JS, Eastham JA. Factors predicting early return of continence after radical prostatectomy. *Curr Urol Rep*. 2010;11:191-197.

206. Skolarus TA, Weizer AZ, Hedgepeth RC, He C, Wood DP Jr, Hollenbeck BK. Understanding early functional recovery after robotic prostatectomy. *Surg Innov*. 2012;19:5-10.

207. Srivastava A, Peyser A, Gruschow S, Harneja N, Jiskrova K, Tewari AK. Surgical strategies to promote early continence recovery after robotic radical prostatectomy. *Arch Esp Urol*. 2012;65:529-541.

208. Campbell SE, Glazener CM, Hunter KF, Cody JD, Moore KN. Conservative management for postprostatectomy urinary incontinence. *Cochrane Database Syst Rev*. 2012;1:CD001843.

209. Goode PS, Burgio KL, Johnson TM 2nd, et al. Behavioral therapy with or without biofeedback and pelvic floor electrical stimulation for persistent postprostatectomy incontinence: a randomized controlled trial. *JAMA*. 2011;305:151-159.

210. Chung E, Cartmill R. Diagnostic challenges in the evaluation of persistent or recurrent urinary incontinence after artificial urinary sphincter (AUS) implantation in patients after prostatectomy. *BJU Int*. 2013;112(suppl 2):32-35.

211. Comiter CV. Male incontinence surgery in the 21st century: past, present, and future. *Curr Opin Urol*. 2010;20:302-308.

212. Rai BP, Cody JD, Alhasso A, Stewart L. Anticholinergic drugs versus non-drug active therapies for non-neurogenic overactive bladder syndrome in adults. *Cochrane Database Syst Rev*. 2012;12:CD003193.

213. Herschorn S. Update on management of post-prostatectomy incontinence in 2013. *Can Urol Assoc J*. 2013;7(9-10 suppl 4):S189-S191.

214. Fisher WI, Johnson AK, Elkins GR, et al. Risk factors, pathophysiology, and treatment of hot flashes in cancer. *CA Cancer J Clin*. 2013;63:167-192.

215. Engstrom CA. Hot flashes in prostate cancer: state of the science. *Am J Mens Health*. 2008;2:122-132.

216. Walker LM, Tran S, Robinson JW. Luteinizing hormone–releasing hormone agonists: a quick reference for prevalence rates of potential adverse effects. *Clin Genitourin Cancer*. 2013;11:375-384.

217. Alekshun TJ, Patterson SG. Management of hot flashes in men with prostate cancer being treated with androgen deprivation therapy. *Support Cancer Ther*. 2006;4:30-37.

218. Loprinzi CL, Dueck AC, Khoyratty BS, et al. A phase III randomized, double-blind, placebo-controlled trial of gabapentin in the management of hot flashes in men (N00CB). *Ann Oncol*. 2009;20:542-549.

219. American College of Surgeons Commission on Cancer. Cancer program standards 2012: ensuring patient-centered care, version 1.2.1. facs.org/cancer/coc/programstandards2012.pdf. Accessed January 16, 2014.

220. Chipman JJ, Sanda MG, Dunn RL, et al; PROST-QA Consortium. Measuring and predicting prostate cancer related quality of life changes using EPIC for clinical practice. *J Urol*. 2014;191:638-645.

221. Heins MJ, Korevaar JC, Rijken PM, Schellevis FG. For which health problems do cancer survivors visit their General Practitioner? *Eur J Cancer*. 2013;49:211-218.

222. Lu KH, Wood ME, Daniels M, et al. American Society of Clinical Oncology expert statement: collection and use of a cancer family history for oncology providers. *J Clin Oncol*. 2014;32:833-840.