Journal of Cancer Policy xxx (2017) xxx–xxx

Contents lists available at ScienceDirect

Journal of Cancer Policy

journal homepage: www.elsevier.com/locate/jcpo

Correspondence

## Diet and exercise in cancer: Epidemiologic perspectives on optimizing survivorship via lifestyle

One out of five cancer deaths is attributed to obesity [1]. Obesity is preventable; yet, over the last 3 decades, the prevalence of obesity has more than doubled worldwide. More than 1.9 billion adults (approximately 39%) are overweight or obese and, of these, 600 million (13%) are obese [2]. Overweight and obesity increase risk of endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon cancer. For example, a 5-kg/m$^2$ increase in body mass index (BMI) is associated with a 30% increased risk of kidney cancer [3]. The health burden associated with obesity continues after cancer diagnosis. Patients with breast or prostate cancer (which constitute 20% of all new cancers diagnosed worldwide [4]) are at higher risk for recurrence and cancer-specific mortality if they are obese at diagnosis [5–10]. Increasing evidence links overweight and obesity with worse prognosis for most GI cancers, including esophageal, gastric, hepatocellular, pancreatic, and colorectal cancer [11]. A cancer diagnosis is a "teachable moment" when individuals are motivated to make behavior changes to reduce their risk of adverse health outcomes [12–15]. Thus, we need to capitalize on this moment to help patients make sustainable, effective lifestyle changes to achieve or maintain a healthy body weight and improve their quality-of-life and lower risk of cancer recurrence, comorbidities, and death.

Focusing on diet quality and quantity paired with regular exercise is a message patients can act upon. It is well recognized that diet and exercise are important modifiable lifestyle factors that influence individual body fatness. There is also growing evidence that suggests these lifestyle behaviors have an important role in the progression of several cancers [8,16–18], independent of changes in weight. Vigorous physical activity and brisk walking after prostate cancer diagnosis are associated with ~40–60% lower risks of prostate cancer progression or death, independent of BMI [19,20]. A meta-analysis of 16 prospective cohort studies in breast cancer survivors and six studies in colorectal cancer survivors reported that high vs. low post-diagnosis physical activity was associated with 28% and 39% lower risk of breast and colorectal cancer-specific mortality, respectively [21]. Additionally, results from a pooled analysis of three of these studies, which examined change in physical activity from pre- to post-diagnosis, reported that those who increased their activity level had a 29% decreased risk of cancer mortality and a 39% decreased risk of total mortality compared to those who did not change their activity or were inactive before diagnosis. Additionally, in a recent meta-analysis of 34 randomized controlled trials of exercise in patients with cancer [22], exercise significantly improved quality of life and physical function during and following treatment, providing consistent evidence to support the integration of exercise with cancer care.

Comprehensive prevention strategies are supported by studies examining healthy lifestyle factors together. A recent analysis of a 6-factor healthy lifestyle score for prevention of prostate cancer mortality, which included not smoking, healthy BMI, vigorous activity and specific foods, reported that men with 5–6 of the healthy behaviors had a 68% reduced risk of developing lethal prostate cancer compared to men with one or none [23]. Vigorous exercise had the highest potential impact on prevention of lethal prostate cancer. Using US-based NHANES data, lethal prostate cancer could be reduced by an estimated 34% if all men exercised to the point of sweating for at least three hours a week, and an estimated 47% of lethal prostate cancer could be prevented if men adopted 5 of the 6 factors [23]. Similarly, an estimated 37% of colon cancer could be prevented by adhering to six lifestyle behaviors (healthy BMI, physical activity, not smoking, diet factors) [24]. While factors associated with risk of cancer diagnosis and death may differ, it is clear that increased adoption of an overall healthy lifestyle would have a substantial impact on reducing the global burden of cancer.

Epidemiologic findings have frequently been faced with skepticism. Apparently conflicting findings are common and cause confusion and mistrust of the scientific enterprise. However, there are often reasonable explanations for apparently divergent results (e.g., differences in study design, data collection, or intervention protocol). For example, results on elevated post-diagnosis BMI and outcomes in colorectal cancer have been mixed, with some studies showing an adverse impact on disease-specific survival and others showing no association [8]. This discrepancy could be explained by biases such as reverse causation (i.e., the effect of aggressive cancer or its treatment to cause weight loss) and not due to a true protective effect of overweight on colorectal cancer outcomes. Non-obese patients may have a worse prognosis if their lower weight is related to disease progression, making obesity look protective. To reduce the potential for reverse causation, studies often incorporate lag-time, which can be applied by analyzing occurrence of outcomes only after a certain duration of time after survey completion. The amount of lag time should be tailored to correspond with the natural history of the cancer site under study. This should be the standard approach in primary analyses of lifestyle factors in relation to death.

A large number of lifestyle intervention trials have been conducted in cancer patients. Ten weight loss trials in breast cancer patients were reviewed in 2014 by Reeves and colleagues [25], with six studies achieving clinically meaningful weight loss of at least 5% of initial body weight. An updated review by Chlebowski and Reeves [26] identified six additional studies in breast cancer, and two in endometrial cancer patients, many which were telephoned-based, providing further evidence of feasibility, safety, and moderate efficacy in achieving weight loss in cancer patients. The two longest trials of 24-months were designed to achieve 7% (ENERGY trial) [27] and 10% (LISA Trial) [28] weight loss at two years, incorporating weight loss, diet and physical activity goals;

http://dx.doi.org/10.1016/j.jcpo.2017.03.016
2213-5383/© 2017 Published by Elsevier Ltd.

Please cite this article in press as: S.A. Kenfield, et al., Diet and exercise in cancer: Epidemiologic perspectives on optimizing survivorship via lifestyle, J Cancer Policy (2017), http://dx.doi.org/10.1016/j.jcpo.2017.03.016

the control arm of ENERGY received some materials in the public domain, two diet counseling sessions, and physical activity recommendations, while the control arm of LISA received mailed information on healthy living from public sources. Both achieved the greatest weight change at 12 months (−6.0% v −1.5% [27] and −5.5% v −0.7%, [28] respectively), and reported some weight regain after 12 months, when intervention contact tapered (differences of −3.7% v −1.3% [27] and −3.6% v −0.4% [28], respectively, between study arms). Mean duration of moderate or strenuous activity per week was significantly different between arms at 6 and 12 months, but not at 18 or 24 months in ENERGY, with a similar pattern observed in LISA. The incorporation of behavior change techniques, particularly goal setting, self-monitoring of behavior, and follow-up have been shown in shorter-term studies to improve retention [29], and may be necessary to maintain long-term participant engagement. The CanChange intervention in colorectal cancer patients [30] focused on weight maintenance and making physical activity and diet improvements based on national recommendations and individuals goals, rather than on weight loss, and reported increased physical activity, maintenance of BMI, and improved diet habits 6 months post-intervention. The Reach Out for Enhance Wellness (RENEW) trial also incorporated multiple lifestyle behaviors including weight loss, using print materials and telephone counseling. Conducted in 641 long-term (5 or more years from diagnosis) colorectal, breast, and prostate cancer survivors in the United States, Canada, and the United Kingdom, the study reported significant improvements in diet quality, physical activity and BMI from baseline to 2-yr follow-up, and slower rates of decline in physical function during the 1-yr intervention period, compared with the year after intervention completion [31]. These studies support the use of behavioral change programs into cancer care. Telephone-based delivery systems, which are convenient, easily accessible, and relatively low cost, can improve targeted lifestyle behaviors and specific quality of life metrics in cancer patients.

A number of randomized clinical trials of weight loss with cancer endpoints as primary outcomes in women are ongoing [26], with completion dates from late 2016–2030. A review of 20 diet and/or exercise RCTs in men with prostate cancer [29] (10 with weight change or anthropometric measurements as main endpoints) reported that most trials were short-term (median duration 12 weeks), and none reported (or were designed to assess) recurrence or survival endpoints. Longer-term studies and continued follow-up of patients post-intervention are needed to evaluate the relationships of diet, exercise, and weight control on other cancer-specific and all-cause mortality outcomes. If successful, these outcome data would provide additional rationale for incorporating lifestyle interventions into reimbursable or covered health care costs. Given the prohibitive cost, time, and population sizes needed to implement clinical trials that assess the effects of lifestyle interventions on clinical and mortality endpoints, other study outcomes may be considered. Evaluating conventional and novel biomarkers of cancer progression as surrogates for hard endpoints, would provide further evidence of a causal relationship. Our Active Surveillance Exercise (ASX) study for patients with prostate cancer [32] is evaluating change in three tumor genomic classifiers as the primary outcome, while two pre-surgical RCTs will evaluate the impact of caloric restriction and increased physical activity on tumor characteristics in men and women electing surgery for prostate [33] and breast cancer [34]; additional studies with prognostic biomarker outcomes are urgently needed. Moreover, if additional biospecimens are collected *a priori* for future research, the stored specimens can be revisited as prognostication improves and better biomarkers become available.

While we strive to evaluate the potential effects of various behavior changes on long-term clinical importance for cancer, we also can improve how we educate patients. The positive benefits of healthy diet and exercise on physical function and overall health are undisputable. Partnerships between clinicians, epidemiologists, dieticians, exercise specialists, and patient advocates at the local level are essential to develop and implement feasible, sustainable programs that support research to examine long-term outcomes, quality of life, patient satisfaction, and cost-effectiveness. Lifestyle recommendations and implementation resources for cancer patients are available from national organizations including the American Cancer Society [35], American Institute for Cancer Research [36], the World Cancer Research Fund [37], and specific cancer-focused groups, such as the Prostate Cancer Foundation [38]. These resources can be made available in the doctor's office or added to a clinical support program.

In summary, the association between lifestyle factors and cancer survival has been documented in multiple studies across several different cancer types. We must do better to educate the general public and clinicians about the benefits of diet and exercise for cancer prevention and, perhaps even more so, for reducing risk of cancer recurrence and death. Studies examining combinations of health practices suggest a substantial benefit. A diet rich in a wide variety of plant-based foods (e.g., vegetables, nuts/legumes), healthy fats (e.g., dark meat fish, nuts, olive oil), and lean protein (nuts/legumes, skinless unprocessed poultry, fish) combined with non-smoking and regular exercise (including some vigorous activity) is prudent for cancer prevention and improving quality of life and lowering risk of cancer recurrence and death after cancer diagnosis.

*What is the future landscape for research in this field?*

Funding from government agencies for large-scale, long-term trials of lifestyle interventions with disease-free survival endpoints has diminished, while technologies continue to advance. Identifying alternative sources of funding and applying technology-driven strategies can be cost-effective for long-term interventions. For example, the Movember Foundation, a global charity focused on men's health, recently funded a Phase III global trial of exercise for men with metastatic prostate cancer, INTERVAL: Intense Exercise for Survival Among Men with Metastatic Castrate-Resistant Prostate Cancer (aka Global Action Plan 4). INTERVAL will be conducted at over 20 sites in Australia, Europe, Canada, and the USA. These sites will open by mid-2017, with the goal to enroll 866 men over 3 years. Those interested may see clinicaltrials.gov NCT02730338 to learn more. The study intervention period is two years with annual follow-up thereafter. This study will evaluate the effects of psychosocial support with and without aerobic and resistance exercise on overall survival. The intervention design includes both supervised and self-managed exercise modalities, and incorporates online surveys, digital exercise reporting during self-management, text messaging, and a digital psychosocial support component.

In 2015, a systematic review identified 27 studies with physical activity, diet, and/or weight control interventions for cancer survivors using telephone, texting, print, and the Web as the primary method of delivery [39]. The study reported that 70% of the studies provided evidence for initiation of behavior change, with only one reporting on maintenance and one on cost-effectiveness. The integration of digital health tools, including wearable devices (e.g., physical activity trackers), may reduce participant burden, measurement error, and loss to follow-up, though their use could increase barriers to participation for some. It is imperative that we understand patients' preferences to develop interventions that are appropriate for the target audience. At UCSF, we piloted a digital lifestyle RCT for prostate cancer patients targeting eight behavioral factors vs. usual care using a custom patient portal, Fitbits for self-monitoring physical activity, and text messaging to reinforce behavior change goals [40]. Personalized lifestyle recommendations were provided to patients at the beginning of the study, based

Please cite this article in press as: S.A. Kenfield, et al., Diet and exercise in cancer: Epidemiologic perspectives on optimizing survivorship via lifestyle, J Cancer Policy (2017), http://dx.doi.org/10.1016/j.jcpo.2017.03.016

on their intake form, and patients had access to weekly blogs and recipes (results to be released in mid-2017). We are implementing another digital dietary RCT for colorectal cancer patients to examine the feasibility of a 12-week web-based dietary program with text messaging (recruitment begins mid-2017); we will secondarily estimate the effects of the web-based dietary program on usual diet and quality-of-life; and follow participants for long-term outcomes.

Effects on quality-of-life and physical function were reported to be significantly larger for supervised than unsupervised interventions [22]; home-based studies that incorporate devices monitored in real-time by study staff may help improve retention and may be more cost-effective. For example, in the ASX study [32], patients wear heart rate monitors to achieve their heart rate zones, monitored by exercise physiologists online. If patients miss sessions or fail to achieve their zone goals, the exercise physiologist contacts the patient to help get him back on track. Regular remote monitoring increases patient accountability and may also increase motivation.

In conclusion, to advance knowledge of the potential benefits of lifestyle in cancer survivorship, we need to: design studies with biologically sound intermediate and long-term outcomes; leverage popular digital health tools to support behavior change; and assess patient preferences and keep pace with personalized medicine practices. Additional efforts should be made to test interventions in diverse populations and various stages of cancer treatment and survivorship. With appropriate planning and support, it will be feasible to provide tailored lifestyle guidelines and interventions to patients with cancer, based on their cancer site, treatment, tumor genotype/phenotype, socio-demographic characteristics, and individual preferences. As our knowledge base grows, it is imperative that lifestyle interventions become scalable, cost-effective, and promote long-term behavioral change to maximize survival and quality of life for all.

## References

[1] American Cancer Society, Body Weight and Cancer Risk, 2016, http://www.cancer.org/cancer/cancercauses/dietandphysicalactivity/bodyweightandcancerrisk/body-weight-and-cancer-risk-effects (Accessed 03 January 2017).
[2] World Health Organization, Obesity and Overweight, 2016 http://www.who.int/mediacentre/factsheets/fs311/en/.
[3] World Cancer Research Fund/American Institute for Cancer Research, Continuous Update Project Report: Diet, Nutrition, Physical Activity and Kidney Cancer, 2015, wcrf.org/kidney-cancer-2015 (Accessed 18 December 2016).
[4] World Cancer Research Fund International adapted from GLOBOCAN 2012 v1.1 Cancer Incidence and Mortality Worldwide: International Agency for Research on Cancer. Cancer facts and figures: worldwide data. 2014; http://www.wcrf.org/int/cancer-facts-figures/worldwide-data (Accessed 01 March 2017).
[5] J. Ma, H. Li, E. Giovannucci, et al., Prediagnostic body-mass index, plasma C-peptide concentration, and prostate cancer-specific mortality in men with prostate cancer: a long-term survival analysis, Lancet Oncol. 9 (11) (2008) 1039–1047.
[6] Y. Cao, J. Ma, Body mass index, prostate cancer-specific mortality, and biochemical recurrence: a systematic review and meta-analysis, Cancer Prev. Res. (Phila.) 4 (4) (2011) 486–501.
[7] M. Protani, M. Coory, J.H. Martin, Effect of obesity on survival of women with breast cancer: systematic review and meta-analysis, Breast Cancer Res. Treat. 123 (3) (2010) 627–635.
[8] J. Lee, J.Y. Jeon, J.A. Meyerhardt, Diet and lifestyle in survivors of colorectal cancer, Hematol. Oncol. Clin. North Am. 29 (1) (2015) 1–27.
[9] B. Doleman, K.T. Mills, S. Lim, M.D. Zelhart, G. Gagliardi, Body mass index and colorectal cancer prognosis: a systematic review and meta-analysis, Tech. Coloproctol. 20 (8) (2016) 517–535.
[10] D.S. Chan, A.R. Vieira, D. Aune, et al., Body mass index and survival in women with breast cancer-systematic literature review and meta-analysis of 82 follow-up studies, Ann. Oncol. 25 (10) (2014) 1901–1914.
[11] J.C. Brown, J.A. Meyerhardt, Obesity and energy balance in GI cancer, J. Clin. Oncol. 34 (35) (2016) 4217–4224.
[12] S.M. Bluethmann, K. Basen-Engquist, S.W. Vernon, et al., Grasping the 'teachable moment': time since diagnosis, symptom burden and health behaviors in breast, colorectal and prostate cancer survivors, Psycho-Oncology 24 (2015) 1250–1257.
[13] W. Demark-Wahnefried, N.M. Aziz, J.H. Rowland, B.M. Pinto, Riding the crest of the teachable moment: promoting long-term health after the diagnosis of cancer, J. Clin. Oncol. 23 (24) (2005) 5814–5830.
[14] W. Demark-Wahnefried, C.L. Rock, K. Patrick, T. Byers, Lifestyle interventions to reduce cancer risk and improve outcomes, Am. Fam. Phys. 77 (11) (2008) 1573–1578.
[15] C.M. McBride, E. Clipp, B.L. Peterson, I.M. Lipkus, W. Demark-Wahnefried, Psychological impact of diagnosis and risk reduction among cancer survivors, Psychooncology 9 (5) (2000) 418–427.
[16] S.F. Peisch, E.L. Van Blarigan, J.M. Chan, et al., Prostate cancer progression and mortality: a review of diet and lifestyle factors, World J. Urol. (2016), http://dx.doi.org/10.1007/s00345-016-1914-3.
[17] R.T. Chlebowski, Nutrition and physical activity influence on breast cancer incidence and outcome, Breast 22 (Suppl. 2) (2013) S30–S37.
[18] E.L. Van Blarigan, J.A. Meyerhardt, Role of physical activity and diet after colorectal cancer diagnosis, J. Clin. Oncol. 33 (16) (2015) 1825–1834.
[19] S.A. Kenfield, M.J. Stampfer, E. Giovannucci, J.M. Chan, Physical activity and survival after prostate cancer diagnosis in the Health Professionals Follow-Up Study, J. Clin. Oncol. 29 (6) (2011) 726–732.
[20] E.L. Richman, S.A. Kenfield, M.J. Stampfer, A. Paciorek, P.R. Carroll, J.M. Chan, Physical activity after diagnosis and risk of prostate cancer progression: data from the Cancer of the Prostate Strategic Urologic Research Endeavor, Cancer Res. 71 (11) (2011) 3889–3895.
[21] D. Schmid, M.F. Leitzmann, Association between physical activity and mortality among breast cancer and colorectal cancer survivors: a systematic review and meta-analysis, Ann. Oncol. 25 (7) (2014) 1293–1311.
[22] L.M. Buffart, J. Kalter, M.G. Sweegers, et al., Effects and moderators of exercise on quality of life and physical function in patients with cancer: an individual patient data meta-analysis of 34 RCTs, Cancer Treat. Rev. 52 (2017) 91–104.
[23] S.A. Kenfield, J.L. Batista, J.L. Jahn, et al., Development and application of a lifestyle score for prevention of lethal prostate cancer, J. Natl. Cancer Inst. 108 (3) (2016).
[24] J. Erdrich, X. Zhang, E. Giovannucci, W. Willett, Proportion of colon cancer attributable to lifestyle in a cohort of US women, Cancer Causes Control. 26 (9) (2015) 1271–1279.
[25] M.M. Reeves, C.O. Terranova, E.G. Eakin, W. Demark-Wahnefried, Weight loss intervention trials in women with breast cancer: a systematic review, Obes. Rev. 15 (9) (2014) 749–768.
[26] R.T. Chlebowski, M.M. Reeves, Weight loss randomized intervention trials in female cancer survivors, J. Clin. Oncol. 34 (35) (2016) 4238–4248.
[27] C.L. Rock, S.W. Flatt, T.E. Byers, et al., Results of the exercise and nutrition to enhance recovery and good health for you (ENERGY) trial: a behavioral weight loss intervention in overweight or obese Breast cancer survivors, J. Clin. Oncol. 33 (28) (2015) 3169–3176.
[28] P.J. Goodwin, R.J. Segal, M. Vallis, et al., Randomized trial of a telephone-based weight loss intervention in postmenopausal women with breast cancer receiving letrozole: the LISA trial, J. Clin. Oncol. 32 (21) (2014) 2231–2239.
[29] H. Mohamad, G. McNeill, F. Haseen, J. N'Dow, L.C. Craig, S.D. Heys, The effect of dietary and exercise interventions on body weight in prostate cancer patients: a systematic review, Nutr. Cancer 67 (1) (2015) 43–60.
[30] A.L. Hawkes, S.K. Chambers, K.I. Pakenham, et al., Effects of a telephone-delivered multiple health behavior change intervention (CanChange) on health and behavioral outcomes in survivors of colorectal cancer: a randomized controlled trial, J. Clin. Oncol. 31 (18) (2013) 2313–2321.
[31] W. Demark-Wahnefried, M.C. Morey, R. Sloane, 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. 30 (19) (2012) 2354–2361.
[32] ClincialTrials.gov: a service of the U.S. National Institutes of Health. Active Surveillance Exercise Clinical Trial. 2016; https://clinicaltrials.gov/ct2/show/NCT02435472 (Accessed 31 December 2016).
[33] W. Demark-Wahnefried, J.W. Nix, G.R. Hunter, et al., Feasibility outcomes of a presurgical randomized controlled trial exploring the impact of caloric restriction and increased physical activity versus a wait-list control on tumor characteristics and circulating biomarkers in men electing prostatectomy for prostate cancer, BMC Cancer 16 (2016) 61.
[34] Y. Tsuruta, L.Q. Rogers, H. Krontiras, et al., Exploring effects of presurgical weight loss among women with stage 0-II breast cancer: protocol for a randomised controlled feasibility trial, BMJ Open 6 (9) (2016) e012320.
[35] American Cancer Society, American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Survivors (2012), 2012, http://www.cancer.org/healthy/informationforhealthcareprofessionals/acsguidelines/nupaguidelinesforcancersurvivors/ (Accessed 12 December 2016).
[36] American Institute for Cancer Research, AICR's Guidelines for Cancer Survivors, 2016, http://www.aicr.org/patients-survivors/aicrs-guidelines-for-cancer.html (Accessed 12 December 2016).
[37] World Cancer Research Fund International, Continuous Update Project Findings & Reports, 2016, http://www.wcrf.org/int/research-we-fund/continuous-update-project-findings-reports (Accessed 18 December 2016).
[38] Prostate Cancer Foundation; University of California San Francisco; Harvard T.H. Chan School of Public Health. Health and Wellness: Living with Prostate Cancer 2015; https://www.pcf.org/wp-content/uploads/2016/10/PCF_HW_Guide.pdf (Accessed 12 December 2016).

Please cite this article in press as: S.A. Kenfield, et al., Diet and exercise in cancer: Epidemiologic perspectives on optimizing survivorship via lifestyle, J Cancer Policy (2017), http://dx.doi.org/10.1016/j.jcpo.2017.03.016

[39] A.D. Goode, S.P. Lawler, C.L. Brakenridge, M.M. Reeves, E.G. Eakin, Telephone, print, and Web-based interventions for physical activity, diet, and weight control among cancer survivors: a systematic review, J. Cancer Surviv.: Res. Pract. 9 (4) (2015) 660–682.
[40] ClincialTrials.gov: a service of the U.S. National Institutes of Health. Web-based Lifestyle Trial Among Men with Prostate Cancer: Prostate 8 2016; https://clinicaltrials.gov/ct2/show/NCT02470936 (Accessed 12 December 2016).

Stacey A. Kenfield [a,b,*]
[a] *Department of Urology, University of California, San Francisco (UCSF), San Francisco, CA, USA*
[b] *Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA, USA*

Erin L. Van Blarigan [a,b]
[a] *Department of Epidemiology and Biostatistics, University of California, San Francisco (UCSF), San Francisco, CA, USA*
[b] *Department of Urology, University of California, San Francisco (UCSF), San Francisco, CA, USA*

Meir J. Stampfer [a,b]
[a] *Departments of Epidemiology and Nutrition, Harvard T.H. Chan School of Public Health, Boston, MA, USA*
[b] *Channing Division of Network Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA*

June M. Chan [a,b]
[a] *Department of Epidemiology and Biostatistics, University of California, San Francisco (UCSF), San Francisco, CA, USA*
[b] *Department of Urology, University of California, San Francisco (UCSF), San Francisco, CA, USA*

* Corresponding author at: Department of Urology, University of California, San Francisco (UCSF), San Francisco, CA, USA.
*E-mail address:* stacey.kenfield@ucsf.edu (S.A. Kenfield)

17 January 2017
Available online xxx