Clinical Genitourinary Cancer
Vol. 17, No. 3, 161-8

Elisabeth I. Heath[1]
David M. Nanus[2]
Susan Slovin[3]
Chuck Strand[4]
Celestia Higano[5]
Virgil H. Simons[6]
Crawford Johnson[7]
Christos E. Kyriakopoulos[8]
Zachery R. Reichert[9]
Shannon Lory[10]
Daniel J. George[11]
Lorelei A. Mucci[12]
Jack David Marcus[13]
Jill A. Trendel[1]
Cathryn H. Bock[1]

[1]*Karmanos Cancer Institute and Department of Oncology, Wayne State University School of Medicine, Detroit, MI*
[2]*Division of Hematology and Oncology, Department of Medicine, Weill Cornell Medicine and Meyer Cancer Center, New York, NY*
[3]*Sidney Kimmel Center for Prostate and Urologic Cancers, Memorial Sloan Kettering Cancer Center, New York, NY*
[4]*Us TOO International Inc, Des Plaines, IL*
[5]*Fred Hutchinson Cancer Research Center and Division of Medical Oncology, Department of Medicine, University of Washington School of Medicine, Seattle, WA*
[6]*Prostate Net, Newark, NJ*
[7]*Sidney Kimmel Cancer Center, Thomas Jefferson University, Philadelphia, PA, and Sidney Kimmel Comprehensive Cancer Center, Department of Urology, Johns Hopkins University, Baltimore, MD*
[8]*Division of Hematology/Oncology, Department of Medicine, University of Wisconsin School of Medicine and Public Health, Madison, WI*
[9]*Division of Hematology/Oncology, Department of Internal Medicine and University of Michigan Comprehensive Cancer Center, Ann Arbor, MI*
[10]*Arch Virtual, Madison, WI*
[11]*Division of Medical Oncology, Department of Medicine and Duke Cancer Institute, Duke University Medical Center, Durham, NC*
[12]*Department of Epidemiology, Harvard T. H. Chan School of Public Health, Boston, MA*
[13]*Us TOO New York Prostate Cancer Support Group, New York, NY*

Prostate Cancer National Summit's Call to Action

Keywords: Advocacy, Survivorship, Treatment

Submitted: Feb 27, 2019; Accepted: Apr 9, 2019; Epub: Apr 16, 2019

Address for correspondence: Elisabeth I. Heath, MD, Wayne State University Karmanos Cancer Institute, 4100 John R, Hudson-Webber Cancer Research Center Bldg, Room 4234, Detroit, MI 48201
E-mail contact: heathe@karmanos.org

Introduction

On September 16, 2017, the inaugural Prostate Cancer Summit in Detroit, MI, brought together over 370 prostate cancer survivors, caregivers, representatives from Detroit-based community organizations, and members of advocacy groups from throughout the nation. During the summit, these participants interacted with

1558-7673/$ - see frontmatter
https://doi.org/10.1016/j.clgc.2019.04.002

clinicians and researchers from 13 National Cancer Institute–designated comprehensive cancer centers, as well as with members of the Prostate Cancer Clinical Trials Consortium (PCCTC). The 2-day summit, hosted by the Karmanos Cancer Institute and Wayne State University School of Medicine, featured presentations by leading experts and panel discussions covering issues related to medical advancements, advocacy, and survivorship. This report includes the summit's highlights, identifies areas of unmet need, and specifies training areas, tools, and interventions that address those needs.

Discussion

Medical Advancements

According to the latest estimates by the American Cancer Society, 174,650 new cases of prostate cancer and 31,620 deaths from prostate cancer are expected in the United States in 2019, making prostate cancer the second leading cause of cancer death among American men.[1] Many novel drugs, biomarkers, and imaging technologies have been developed and applied to prostate cancer, often based on results from successful prostate cancer clinical trials, including those conducted by the PCCTC. The PCCTC represents coordinated collaboration between cancer research centers committed to designing, implementing, and completing hypothesis-driven phase 1 and 2 trials of novel agents and combinations that could prolong and improve the lives of prostate cancer patients. To effectively convey the vast amount of information on medical advancements to an audience with diverse experiences and knowledge, the summit presentations were structured on a hypothetical patient's prostate cancer journey from screening and diagnosis to treatment and clinical trials. Participants were each provided with a binder containing the speakers' slides and tear-off sheets summarizing the latest clinical information for each topic area to bring to their doctor to facilitate a discussion of testing, treatment, or imaging options.

Screening. The data available for prostate cancer screening recommendations were reviewed and discussed as the first stage of a man's prostate cancer journey. Because a patient's first interaction regarding prostate cancer is typically with his primary care physician (PCP), the PCP is encouraged to discuss the pros and cons of prostate-specific antigen (PSA) testing for most men starting at age 50 and at age 45 for African American men, and for all men with a family history of prostate cancer. Because PSA is one of the first indicators of prostate cancer health, it can be used to start the screening process in combination with digital rectal examination.

After an elevated PSA level is detected, additional blood-, urine- and tissue-based biomarker tests are available to evaluate the risk of having prostate cancer, in particular a clinically relevant disease.[2] Examples of blood- and urine-based tests include the following. First, the 4Kscore test (Opko Health BioReference Laboratories, Elmwood Park, NJ) incorporates serum levels of 4 human kallikreins (total PSA, free PSA, intact PSA, and human kallikrein 2) and other clinical information into an algorithm to generate a patient-specific percentage risk of having Gleason score 7 or higher on subsequent biopsy.[3] Second, the Prostate Health Index (Beckman Coulter, Brea, CA) is a mathematical formula that relies on the differing proportions of serum levels of total PSA, free PSA, and [−2]proPSA, a precursor of free PSA.[4,5] Third, prostate cancer antigen 3 (PCA3), a noncoding RNA overexpressed in prostate cancer and excreted in urine, together with urinary PSA RNA, are measured by the Progensa PCA3 assay (Gen-Probe, San Diego, CA) to calculate their ratio (PCA3 score). The diagnostic accuracy of PCA3 score is superior to serum PSA alone in men at high risk of prostate cancer.[6-8] Fourth, the SelectMDx (MDxHealth, Irvine, CA) urinary assay is used to generate the cancer risk score that includes distal-less homeobox 1 (DLX1) and homeobox C6 (HoxC6) RNA levels that are increased during the progression of cancer to a higher-grade, castration-resistant, and metastatic stage.[9,10] Regardless of the screening test, the earlier the presence of prostate cancer is established, the quicker a decision for the appropriate clinical steps can be made.

Diagnosis. At diagnosis of prostate cancer, the patient may want to consider further discussion of the results and treatment options with his PCP. The patient's long-term relationship and trust in his PCP is likely to be greater than with his current cancer providers, and the PCP can take into account the patient's overall medical condition, lifestyle, and personal preferences while discussing treatment options. Consequently, the PCP needs to be familiar with available and current treatment options, including the risks and impacts of each, in order to engage in meaningful discussion with the patient. Some PCPs may not be well versed in all available treatment options, and PCPs are not cancer specialists, as urologists and oncologists are. Therefore, communication among medical providers is an essential and often underutilized aspect in the continuum of care, and would greatly benefit patients.

A key element of diagnosis involves determining the extent and type of cancer present, usually classified according to Gleason score. Providers and patients need a better understanding of pathology results in the context of new guidelines based on the addition of grade groups to the Gleason scoring system,[11] as this will affect the treatment decision-making process. Genetic and genomic tests can also assist management decisions. For example, some biomarker tests can be used to determine whether to perform a biopsy or to repeat a prostate biopsy; others help with active surveillance and risk assessment after radical prostatectomy; still others can be used to determine which treatment might best for different types of resistant metastatic prostate cancer.[2,12-17] Some of these tests are outlined in Table 1.

New imaging technologies, such as prostate magnetic resonance imaging, can help guide screening and biopsy recommendations, and thus help decision making for the patient and the physician. Prostate magnetic resonance imaging can be used to guide biopsy procedures for accuracy, for active surveillance of low-grade disease, when the PSA begins to increase, in preoperative or preradiation planning for patients with high-grade disease, or to evaluate for recurrence after prostatectomy.

Another emerging imaging modality is an expansion of the positron-emission tomography scan to include different types of radiotracers, such as ^{11}C- or ^{18}F-labeled acetate and choline, ^{68}Ga- or ^{18}F-labeled prostate-specific membrane antigen (PSMA), ^{18}F-sodium fluoride, ^{18}F-fluciclovine, ^{18}F-flurodeoxyglucose, and androgen receptor probes.[18,19] These are used to detect cancer early,

Table 1 Genetic and Genomic Testing Relevant for Prostate Cancer Detection, Stratification and/or Treatment Decisions

Biomarker	Technology, Brand Name, and/or Manufacturer	Indication	Predicted Outcome and/or Utility
DNA methylation of 3 genes (*APC, GSTP1, RASSF1*)	Quantitative methylation- specific polymerase chain reaction; ConfirmMDx (MDxHealth, Irvine, CA)	Reducing repeated biopsies	Presence or absence of prostate cancer
12 cancer-related genes (representing 4 biological pathways)	Quantitative polymerase chain reaction; Oncotype DX Prostate Cancer Assay (Genomic Health, Redwood City, CA)	Postbiopsy active surveillance decision	Adverse pathology (primary GS 4, GS 5, pT3)
31 cell-cycle progression genes	Quantitative polymerase chain reaction; Prolaris (Myriad Genomic, Salt Lake City, UT)	Postbiopsy[a] active surveillance decision; post-RP[b] risk assessment	Adverse pathology, prostate cancer progression
22 RNAs chosen by statistical selection to predict metastases	Transcriptome-wide microarray expression analysis; Decipher (GenomeDx Biosciences, San Diego, CA)	Post-RP risk assessment	Risk of clinical metastases, adjuvant radiation
Mutations (germ line and/or somatic) of mismatch repair genes *BRCA1* and *BRCA2*	Next generation DNA sequencing; Illumina NextSeq 500 (Illumina, San Diego, CA)[c]	mCRPC	PARP inhibitor therapy
Mutations (germ line and/or somatic) of mismatch repair genes (*MSH2, MSH6, MLH1, PMS2*)	Next generation DNA sequencing; Illumina NextSeq 500 (Illumina, San Diego, CA)[c]	mCRPC	Immunotherapy beneficial
Mutations of androgen receptor; amplification of androgen receptor	Next-generation DNA sequencing; Illumina NextSeq 500 (Illumina, San Diego, CA)[c]; array CGH for chromosome copy number analysis; Agilent CGH microarrays (Agilent, Santa Clara, CA)[c]	Before androgen receptor antagonist	Sensitivity or resistance to treatment

Abbreviations: APC = adenomatous polyposis coli; CGH = comparative genomic hybridization; GS = Gleason score; GSTP1 = glutathione S-transferase P1; mCRPC = metastatic castration-resistant prostate cancer; *MLH1* = MutL homolog 1; PARP = poly(ADP)ribose polymerase; *PMS2* = PMS1 homolog 2; pT3 = pathologic stage III (tumor has extended outside of prostate and may involve nearby tissues); *RASSF1* = Ras association domain-containing protein 1; RP = radical prostatectomy; *BRCA1/2* = breast cancer–associated gene 1/2; *MSH2/6* = MutS homologs 2/6.
[a]Biopsy tissues obtained from men with untreated prostate cancer.
[b]Prostatectomy tissues obtained from treated men.
[c]Blood and/or saliva can be used; all tests used biopsy or prostatectomy tissue.

especially in patients with PSA relapse, as well as to detect distant disease or assess response to treatment. At the summit, the audience was informed about the regulatory status of these tests and why medical insurance approval may be difficult to obtain at the present time.

Treatments. Patients who present with prostate cancer that is still confined to the prostate often live for many years with active surveillance. It is important that patients whose disease progresses after localized treatment or who present with nonlocalized cancer work with providers who are familiar with available therapies and their optimal sequence. Urologists and/or radiation oncologists often manage care up to the point of diagnosis of cancer spread outside the prostate. At that point, a medical oncologist trained in administration of chemotherapies, hormone therapies, and bone supportive therapies, as well as in coordination of complex care plans, should become involved to generate a unique treatment road map for each patient.

In the case of metastatic hormone-sensitive prostate cancer, the best treatment practice is to administer androgen-deprivation therapy (ADT) to decrease testosterone levels in the body. ADT is accomplished by surgically removing the testicles or by providing a hormone injection monthly, every 3 months, or every 6 months. ADT has a more than 95% chance of decreasing the PSA. Unfortunately, ADT alone controls the cancer for only 1 or 2 years on average. To prolong this initial disease control, docetaxel chemotherapy or the oral androgen synthesis inhibitor abiraterone acetate may be considered, depending on the cancer's original pathology, disease distribution, and safety concerns.[20]

If the cancer grows and spreads in this low-testosterone environment created by ADT, it is deemed metastatic castration-resistant prostate cancer (mCRPC), and the treatment regimen involves continuing ADT. A major challenge remains the appropriate timing of mCRPC therapies, because the treatment paradigm has changed rapidly with several novel therapeutic options approved by the US Food and Drug Administration. The drugs for treatment of mCRPC approved in the last few years include abiraterone acetate and the androgen receptor inhibitor enzalutamide, the chemotherapeutic cabazitaxel, the immunotherapeutic sipuleucel-T, and the bone-targeting radionuclide ^{223}Ra for men with bone metastasis.[21]

In addition, metastatic tumors can be analyzed for unique DNA, RNA, or proteins to match patients to other potentially beneficial targeted drugs that might not otherwise be considered, such as the poly(ADP-ribose) polymerase inhibitors.[15] Moreover, checkpoint inhibitors can be used as immunotherapeutics (eg, pembrolizumab) for treatment of mCRPC patients with mismatch repair deficiency and/or microsatellite instability.[22,23] Other therapeutic approaches include administering second-generation antiandrogens (eg, apalutamide and darolutamide), inhibitors of mitogen-activated extracellular signal-related kinase (*MEK1/2*; eg, trametinib) and phosphatidylinositol 3-kinase (PI3K)/protein kinase B (AKT)/mammalian target of rapamycin (mTOR) pathways (eg, the AKT

Table 2 Training, Tools, and Interventions That Address Unmet Needs

Medical Advancements
Keeping up to date with new guidelines based on addition of grade groups to Gleason scoring system.
Staying informed on new genetic/genomic tests and imaging modalities that can influence prostate cancer management decisions.
Providing training in chemotherapy, hormone therapy, and bone supportive therapy administration, as well as in coordination of complex care plans for prostate cancer specialists who should be involved in generating unique treatment road map for each patient.
Keeping primary care physicians informed of available and/or developmental treatment options, such as targeted therapies and immunotherapies.
Raising awareness of importance of active surveillance in preventing overdiagnosis and overtreatment.
Providing counseling about salvage radiation as treatment option after radical prostatectomy.
Promoting patients' understanding of changing landscape for systemic therapies, in particular metastatic castration-resistant prostate cancer management.
Developing enhanced oncologist training to raise awareness of various avenues of financial assistance for therapies to be presented to patient.
Advocacy
Facilitating awareness of best practices in prostate cancer screening and treatment by working with medical societies and institutions to ensure that up-to-date, high-quality information is distributed regularly to all providers, including primary care physicians.
Making changes in health care system to alert patient navigators about patient condition at time of learning critical diagnosis in order to accompany him at future doctor's visits to help him with articulating questions and assimilating information.
Equipping patient with list of questions to guide conversation with medical professional and to ensure that most important issues are addressed.
Having outreach plan into those communities from which patients will be recruited for trial as part of research project.
Engaging person with credibility at community level to provide reasons for recruiting and retaining participants in clinical trial.
Promoting awareness of clinical trials, especially among physicians not associated with major research facilities where most clinical trials are conducted, in order to ensure participation of patients from underrepresented groups in clinical trials.
Facilitating early provider—patient discussion about potential incorporation of patient in clinical trial.
Promoting recognition of critical role of expert groups for success of clinical trials.
Supporting continuation of research funding, especially of multicenter research funding.
Offering services to address issue of affordability/economic disparity by local academic and medical institutions.
Addressing and engaging women and caregivers.
Using infographics, video presentations, and other web interactive media.
Survivorship
Having clear understanding of identity of prostate cancer survivor.
Designing longitudinal studies on quality of life, and discussing findings with patients, family members, and caregivers.
Promoting patient recruitment for longitudinal studies, such as ROCS and IRONMAN.
Forming focus groups to empower family members and caregivers in assisting prostate cancer patients.

Abbreviations: ROCS = Detroit Research on Cancer Survivors; IRONMAN = International Registry to Improve Outcomes in Men With Advanced Prostate Cancer.

inhibitor ipatasertib), as well as antibody-carrying toxic drugs and radionuclides targeting prostate cancer cells (eg, the PSMA-targeting auristatin, maytansinoid, ^{131}I-MIP, and ^{177}Lu-PSMA-617).[21,24-29]

Clinical Trials. One of the main themes of the summit was the importance of participation by patients in prostate cancer research that has allowed men to live longer with advanced disease. Many of the National Cancer Institute—designated comprehensive cancer centers and the PCCTC have been conducting clinical trials exploring new treatment approaches that are critical for advancing drug development. Specifically, the PCCTC has conducted 162 clinical trials involving 6066 patients. Of note, in the next-generation clinical trials that are designed to address tumor molecular heterogeneity, approved therapies are combined with experimental drugs in order to synergize with each other and/or activate the patient's own immune system. Such trials require an engagement of a clinical scientist who is familiar with experimental therapies. Given the complexity of such trials, the role of supporting organizations, such as advocacy groups, is crucial.

Early in their journey, patients should ask their providers about available clinical trials that might improve their symptoms or chance of survival. Providers, in turn, should be open to engage in such discussions. When appropriate, trials testing experimental therapies either alone or in combination with approved therapies can be considered. In addition, many trials specify which treatments are required to qualify for inclusion. There are also restrictions depending on organ function, blood cell counts, and overall patient health. Therefore, arranging an early discussion between a provider and the patient regarding potential incorporation of the patient in a clinical trial cannot be overemphasized.

Raising Awareness. The importance of active surveillance in addressing the challenge of overdiagnosis and overtreatment associated with screening for prostate cancer should not be underestimated. For 40% to 50% of patients with favorable-risk prostate cancer, active surveillance provides an opportunity for avoiding unnecessary treatment and related undesirable quality-of-life effects in the majority, and by providing definitive management for the minority who are reclassified with a life-threatening disease over time.[30] Active surveillance is a solution for overtreatment of a low-risk (low-grade, low-volume) prostate cancer.[31] Accordingly, active surveillance for patients with low-grade prostate cancer was

successful in reducing the need for intervention in most diagnosed patients, with an extremely low rate of progression to metastatic disease.[32]

Because up to 60% of prostate cancer patients who undergo radical prostatectomy may develop biochemical relapse and require further local treatment,[33] serial PSA testing with initiation of early salvage radiotherapy is considered for most men after radical prostatectomy. Serum PSA can help detect low-volume prostate cancer recurrence, and therefore, clinicians can better select those patients who are most likely to benefit from salvage radiation. Likewise, up to half of men with high-risk features may be spared from potentially unnecessary adjuvant therapy and its associated adverse effects and costs.[34] Salvage radiation can eradicate any residual localized microscopic disease; it is associated with improved progression-free survival (biochemical and clinical) as well as improved overall survival in high-risk patients, notwithstanding the associated toxicities.[33,35] Until genomic profiling is proven to provide more personalized outcome assessments, patients should be counseled about both approaches, with joint decision making based on a careful assessment of the risks and benefits of each treatment option.[34]

At presentation, men should understand the changing landscape of systemic cancer therapies, in particular concerning mCRPC management. Patients should know that in the ongoing precision oncology era, the greatest challenge in mCRPC therapy is choosing among many new therapies the right treatment in the right patient at the right time. Making use of molecular and genetic findings and phenotypic characteristics as well as identification of predictive biomarkers are all expected to contribute to proper treatment decisions, improving clinical outcomes, eliminating unnecessary adverse effects, and avoiding the use of costly therapies in mCRPC patients. Before changing clinical practice, however, more prospective randomized multi-institutional trials are needed to determine evidence-based sequencing strategies for best mCRPC therapy.[21,36]

Clinicians should be aware of factors influencing each patient's treatment beyond those of the cancer itself, such as the patient's ease of accessing appropriate care; for instance, chemotherapy requires multiple visits, and ^{223}Ra must be administered by specialty-trained physicians. Another nonclinical treatment consideration is cost, which can be as stressful as the cancer itself. Clinics that care for a large number of prostate cancer patients often have dedicated support staff to help find financial relief and support. Pharmaceutical companies often offer assistance programs that can potentially mitigate costs. Furthermore, repeated letters of appeal from one's physician may be needed to obtain financial assistance via foundational and institutional grants. This takes a lot of coordination and resources, but it is critical in today's environment for patients to successfully obtain the therapy. The oncologist should be aware of the available resources for financial assistance programs and/or direct patients to the pharmacist for payment option discussions. Providers' experiences with various treatments can also influence which therapies they present to their patients, again reinforcing the need for well-versed prostate cancer specialists to be involved. This need could be addressed by developing enhanced physician training so that the patient can be assured of receiving care of the highest standard.

Advocacy

Patients' outcomes rely not only on the engagement of the physician and research community but also on continued support from friends, family, and advocacy programs to address patient questions, concerns, and adverse effects from therapies. Advocacy can involve one or more of the following activities: raising awareness; training and educating patients, clinicians, and policy makers; providing emotional support; conducting research; and taking political action to support legislation.

At the summit, representatives from different organizations explained the mission of their organization's type of advocacy. A few examples include the Southwest Oncology Group, which is focused on research; Movember, which is focused on raising awareness; and Us TOO, which is focused on education and support for patients. The following 4 primary aspects of advocacy efforts emerged from the summit: (1) physician education, (2) patient education, (3) patient support and mentoring, and (4) lobbying for change.

Physician Education. PCPs are involved in many aspects of patient care, yet they may not be fully informed of the newest treatments or tests available for prostate cancer. Discussions at the summit indicated that patient advocates can facilitate awareness of best practices in prostate cancer screening and treatment by working with medical societies and institutions to ensure that up-to-date, high-quality information is distributed regularly to PCPs as well as other providers. Patient advocates can also help by inviting PCPs, urologists, medical oncologists, and others to meet with patient support groups so that health care providers can gain a better understanding of the collective priorities, fears, and educational needs of prostate cancer patients and their caregivers.

The recurrent theme of clinical trials at the summit highlighted the importance of advocates to increase physicians' awareness of clinical trials, especially of those physicians not associated with the major research facilities where most clinical trials take place, as well as to promote patients' participation. Although clinical trials offer patients access to new treatments not generally available, only 3% of cancer patients actually participate in a clinical trial.[37] This low rate of participation is even worse among African American men with prostate cancer. African American men, who make up 12.6% of the US population, have a 2.4 times greater risk of lethal prostate cancer compared to white men. Thus, they should optimally constitute 25% of participants in clinical trials for aggressive prostate cancer. From 2004 to 2015, however, only 3.3% of participants in mCRPC phase 3 clinical trials were not white.[38] To address the need for an increased clinical trial participation of underrepresented groups, the PCCTC trials have enrolled approximately 13% of participants from underrepresented groups. This is a substantial improvement compared to the current overall accrual rate.

Patient Education. In addition to informing providers about patients' needs, advocates educate patients by providing reliable information, tools, and support. In this context, patient advocates help men and their caregivers understand, from the patient's perspective, what they should consider when making treatment decisions for prostate cancer and navigating adverse effects of therapy and possible disease progression.

Although patients can often be their own most effective advocates, the full range of advocacy involves others who encourage and

support the patient. A fellow patient or knowledgeable third party can assist the patient, who may be overwhelmed by the stress of dealing with his condition or adverse treatment effects. Advocacy groups that focus on training and education can assist patients and caregivers/loved ones by providing advice and information to help overcome barriers and improve communication between physicians and patients. Prostate cancer patients will require up-to-date information as their disease progresses, new treatments emerge, and personalized medicine advances are made on the basis of rapidly evolving genetic and genomic tests.

Ideally, information is delivered face to face in clear, understandable language from trusted physicians who can explain the nuances of the choices available and respond immediately to questions or concerns.[39] The heavy workload of PCPs, however, may limit the extent of direct communication between the physician and the patient.[40] In addition, men may be more likely than women to skip doctor visits.[41] This is especially true for African Americans, perhaps as a result of a distrust of physicians and the health care system in general.[42,43]

Online health information has become increasingly popular among patients.[44] The Pew Research Center reported in 2013 that 59% of US adults had looked online for health information in the previous year.[45] The 2013, National Cancer Institute's Health Information National Trends Survey (HINTS) found that 78.8% of respondents looked for health information on the Internet. An exploratory study of the HINTS dataset found that 37.3% were male, and 62.5% were white, and the mean age was 51.2 years.[46] Patients' knowledge of, competence with, and engagement in health decision-making strategies can be increased by reliable online health information.[47-49] The Internet, however, is also a platform for misinformation, fictional stories, and outright quackery directed at unsuspecting patients who are desperate for a cure. To the unsophisticated reader, such content may do more harm than good. For advocates, therefore, the challenge is to provide accurate and useful online information that reach men at all stages of prostate cancer progression, from prescreening through treatment.

Moreover, one of the most effective ways to engage men who are reluctant to learn about prostate cancer is to reach out to them in nonmedical situations. Advocates can provide information at a church, in a community, at sporting events, fairs, and festivals, and at senior centers. Men can take this information to medical appointments to engage in informed, in-depth conversations with their health care providers for shared decision making. In addition, an effective way to mitigate men's reluctance to engage with the medical profession to address prostate cancer risks is to recruit women (eg, wives, sisters, daughters, and mothers) as well as other caregivers. Many men at the summit reported that it was a woman who finally prompted them to visit a doctor and get a PSA test. Thus, it would be important to develop and distribute informational materials directed at women and caregivers to engage them in the fight against prostate cancer.

Patient Support and Mentoring. Once men have been educated about the risks of prostate cancer and the options for responding to those risks, patient advocates can play a key role in helping them receive the care that they need. This may be done by equipping each patient with a list of questions to guide his conversation with the medical professional and to ensure that the most important issues are addressed.[50] In addition, when the patient invites an advocate to accompany him to a doctor's visit, there is a higher likelihood that questions will be answered, understood, and recorded for later consideration on behalf of the patient, who may be overwhelmed by the stress of dealing with his condition or the adverse effects of treatment. Because advocates are aware of concerns that arise during prostate cancer treatment, such as incontinence, bowel leakage, and erectile dysfunction, they can inform patients of over-the-counter products and medical procedures to alleviate such conditions. Patients, however, are generally unaware of patient advocates before abnormal findings at the time of diagnosis; therefore, there is a need to make changes in the health care system regarding advocates who act as patient navigators. Specifically, concurrent with making a critical diagnosis, the patient navigator should be alerted about the patient's condition, so that he or she will be able to accompany the patient at future doctor's visits to help the patient with articulating questions and assimilating information. The timing of this interaction is critical, especially in the case of underserved population in need of assistance with formulating relevant questions.[51]

Advocates can also address patients' concerns about participation in clinical trials and provide information about the potential benefits of doing so. Although prostate cancer is widespread among men in the United States, many men choose to ignore it because the disease and treatment can be debilitating. Advocates can help men understand the need to confront the disease and obtain the services they need through community outreach, including patient education, support, and mentoring. Additionally, advocates can work together with patients to promote prostate cancer research programs and funding.

Lobbying for Change. Patient advocacy extends well beyond the needs of individual patients and their relationships with their doctors. Advocacy groups can and do play a major role at the state and national levels by educating legislators and policy makers, arguing for sensible national standards around PSA testing, and lobbying strenuously for adequate funding for prostate cancer research. For example, the American Cancer Society Cancer Action Network encourages lawmakers and candidates to support laws and policies that will make cancer a top national priority.[52] The inclusion of $100 million in the Department of Defense 2018 budget for prostate cancer research shows that a coordinated advocacy effort, with good data and an understanding of the political process, can be effective.[53] Similarly, advocacy directed toward hospitals, insurance companies, and health maintenance organizations can help ensure that they adopt policies that deliver the best possible treatment options to prostate cancer patients. Moreover, to tackle overtreatment of prostate cancer, advocates should provide input in the implementation of policies aimed at promoting active surveillance in patients with low-risk prostate cancer and reducing local treatment in patients with limited life expectancy, who are unlikely to see a therapeutic benefit.[54]

Survivorship

More than 2.9 million men in the United States who have been diagnosed with prostate cancer at some point are still alive today.[1]

Understanding the unique issues that cancer survivors face is essential to optimally improve health for men and their families. These issues include factors relating to the cancer itself, its treatments, and more holistically the patients' health and well-being. For all cancer survivors, there may be issues with short-term quality of life, predictors of disease recurrence and survival, financial consequences, increased risk of secondary cancers, and other chronic diseases. Moreover, there is increasing understanding of the importance of the quality of life and the support for caregivers and family members. Furthermore, prostate cancer survivors have unique challenges (eg, physical, psychological, sexual, and social) that differ from survivors of other cancers.[55,56] The American Cancer Society presented a detailed summary of the long-term effects associated with different prostate cancer treatments, including increased risk of urinary, bowel, and sexual dysfunctions.[57] Of note, men receiving ADT treatment can experience not only weight gain and hot flashes but also cognitive dysfunction.[58]

Some of the outstanding questions that the prostate cancer scientific and lay communities face include the following: What is the trajectory of quality of life across a man's prostate cancer journey? Are there subgroups of men at greater risk of these outcomes? What strategies might prevent or ameliorate the symptoms? At the same time, a prostate cancer diagnosis can also be a teachable moment for patients to address factors that may affect their risk of heart disease, diabetes, and other chronic diseases. For example, smoking cessation, maintaining a healthy weight, regular physical activity, and a healthy diet can reduce the risk of developing chronic diseases by prostate cancer survivors.

During the summit, two groups provided information about their studies that aim to bridge the knowledge gap. The Detroit Research on Cancer Survivors (ROCS) initiative identifies major factors affecting survivorship in African American men and women. This National Cancer Institute–funded grant (U01CA199240) will enroll a total of 5560 African American patients with prostate, breast, colorectal, or lung cancer to address biologic and genetic differences, inequitable access to resources, and barriers to medical care. It will provide critical data about prostate cancer patients and how the disparity gap can be reduced. This initiative is of particular importance given the known increased cancer mortality among African American men and women. The International Registry to Improve Outcomes in Men With Advanced Prostate Cancer (IRONMAN)[59] will recruite a minimum of 5000 men from around the world to compare treatment patterns across populations, ethnicities, and countries, and to identify unmet needs of men with advanced prostate cancer (NCT03151629).[60] Outcomes from this study will provide a basis for planning clinical trials, obtaining a better understanding of disparities in order to develop more effective interventions, and identifying new molecular markers to improve outcomes for men with advanced prostate cancer. A major focus of IRONMAN is the collection of updated information on patient-reported outcomes including pain, fatigue, emotional health, sleep quality, cognitive health, and other quality-of-life issues. This study is of particular importance because it will address the impact of newer therapies for advanced prostate cancer on quality of life. Summit attendees learned how they could enroll and encourage other survivors to participate in these important clinical trials.

Conclusion

Summit discussions among key stakeholders of complex topics, such as medical advancements, advocacy, and survivorship research, underscored the need for current and timely dialogue among stakeholder groups. Presently there are limited opportunities for open discussion with all stakeholders in the prostate cancer community because the silos within health care keep the conversations separate. There are concerted efforts within scientific communities to listen to the voices of survivors and advocates, but they are not consistent or widespread. Large scientific meetings, such as those organized by the American Society of Clinical Oncology, the American Association of Cancer Research, and the Department of Defense, have invited patient advocates to attend and learn. However, to engage all stakeholders and carry on frank discussions of important issues remains a challenge. Recognizing the need for a forum where these discussions can occur, the model for the national summit as initiated in Detroit will be exported to other cities in the United States. Table 2 identifies key training areas, as well as tools and interventions that target currently recognized areas of unmet needs and that hold potential of being addressed at future events.

On September 21, 2018, a follow-up summit attended by over 250 stakeholders occurred in New York City, hosted by Weill Cornell Medicine (Meyer Cancer Center), Columbia University Medical Center (Herbert Irving Cancer Center), and Memorial Sloan Kettering Cancer Center. The 2017 summit format of highlighting the patient's journey as a model to educate and advocate was used at the 2018 summit. The feedback received from the 2018 summit was favorable, with the majority of attendees in agreement that they were educated on relevant topics and gained additional awareness about survivorship issues and challenges. In 2019 and beyond, other institutions are ready to sponsor similar summits to ensure that advancement of knowledge, continuation of advocacy, and identification of unmet needs for survivors continue.

Acknowledgments

The authors gratefully acknowledge support from Amgen, Augmenix, AbbVie, Bayer, Caris Life Sciences, Champions Oncology, Clovis Oncology, Dendreon, Guardant Health, Janssen, Onco360, Pfizer, Sanofi, and Veterans of Foreign Wars. A special thank-you for editorial assistance to Duska Separovic, PhD, Karmanos Cancer Institute and Department of Oncology, Wayne State University School of Medicine, Detroit, MI. We also thank the numerous staff members, advocates, survivors, physicians, patient care providers, and cancer fighters who dedicated their experience, expertise, and encouragement to this important event.

Disclosure

E.I.H. discloses receiving research funding from Caris Life Sciences and Dendreon, receiving honoraria from Bayer, Dendreon, and Sanofi, and serving on Sanofi's speaker's bureau. C.E.K. discloses receiving research funding from Sanofi. The other authors have stated that they have no conflict of interest.

References

1. American Cancer Society. Key statistics for prostate cancer. Available at: https://www.cancer.org/cancer/prostate-cancer/about/key-statistics.html. Accessed May 2019.

2. McGrath S, Christidis D, Perera M, et al. Prostate cancer biomarkers: are we hitting the mark? *Prostate Int* 2016; 4:130-5.
3. Punnen S, Pavan N, Parekh DJ. Finding the wolf in sheep's clothing: the 4K score is a novel blood test that can accurately identify the risk of aggressive prostate cancer. *Rev Urol* 2015; 17:3-13.
4. Lepor A, Catalona WJ, Loeb S. The Prostate Health Index: its utility in prostate cancer detection. *Urol Clin North Am* 2016; 43:1-6.
5. White J, Shenoy BV, Tutrone RF, et al. Clinical utility of the Prostate Health Index (PHI) for biopsy decision management in a large group urology practice setting. *Prostate Cancer Prostatic Dis* 2018; 21:78-84.
6. Cao L, Lee CH, Ning J, et al. Combination of prostate cancer antigen 3 and prostate-specific antigen improves diagnostic accuracy in men at risk of prostate cancer. *Arch Pathol Lab Med* 2018; 142:1106-12.
7. Ploussard G, de la Taille A. The role of prostate cancer antigen 3 (PCA3) in prostate cancer detection. *Expert Rev Anticancer Ther* 2018; 18:1013-20.
8. Raja N, Russell CM, George AK. Urinary markers aiding in the detection and risk stratification of prostate cancer. *Transl Androl Urol* 2018; 7:S436-42.
9. Van Neste L, Hendriks RJ, Dijkstra S, et al. Detection of high-grade prostate cancer using a urinary molecular biomarker-based risk score. *Eur Urol* 2016; 70:740-8.
10. Liu Y. The context of prostate cancer genomics in personalized medicine. *Oncol Lett* 2017; 13:3347-53.
11. Hansel DE. The Gleason grading system: the approach that changed prostate cancer assessment. *J Urol* 2017; 197:S140-1.
12. Loeb S, Ross AE. Genomic testing for localized prostate cancer: where do we go from here? *Curr Opin Urol* 2017; 27:495-9.
13. Fujita K, Nonomura N. Role of androgen receptor in prostate cancer: a review [e-pub ahead of print], *World J Mens Health*, https://doi.org/10.5534/wjmh.180040. accessed 6 May 2019.
14. Caffo O, Veccia A, Kinspergher S, et al. Aberrations of DNA repair pathways in prostate cancer: future implications for clinical practice? *Front Cell Dev Biol* 2018; 6:71.
15. Frank S, Nelson P, Vasioukhin V. Recent advances in prostate cancer research: large-scale genomic analyses reveal novel driver mutations and DNA repair defects. *F1000Res* 2018; 7.
16. Antonarakis ES, Shaukat F, Isaacsson Velho P, et al. Clinical features and therapeutic outcomes in men with advanced prostate cancer and DNA mismatch repair gene mutations. *Eur Urol* 2019; 75:378-82.
17. Hempelmann JA, Lockwood CM, Konnick EQ, et al. Microsatellite instability in prostate cancer by PCR or next-generation sequencing. *J Immunother Cancer* 2018; 6:29.
18. Das CJ, Razik A, Sharma S. Positron emission tomography in prostate cancer: an update on state of the art. *Indian J Urol* 2018; 34:172-9.
19. Yu CY, Desai B, Ji L, et al. Comparative performance of PET tracers in biochemical recurrence of prostate cancer: a critical analysis of literature. *Am J Nucl Med Mol Imaging* 2014; 4:580-601.
20. Tassinari D, Tamburini E, Gianni L, et al. Early docetaxel and androgen deprivation in the treatment of metastatic, hormone-sensitive prostate cancer. *Rev Recent Clin Trials* 2016; 11:317-23.
21. Nuhn P, De Bono JS, Fizazi K, et al. Update on systemic prostate cancer therapies: management of metastatic castration-resistant prostate cancer in the era of precision oncology. *Eur Urol* 2019; 75:88-99.
22. Hansen A, Massard C, Ott PA, et al. Pembrolizumab for patients with advanced prostate adenocarcinoma: preliminary results from the KEYNOTE-028 study. *Ann Oncol* 2016; 27:243-65.
23. Le DT, Durham JN, Smith KN, et al. Mismatch repair deficiency predicts response of solid tumors to PD-1 blockade. *Science* 2017; 357:409-13.
24. Afshar-Oromieh A, Haberkorn U, Zechmann C, et al. Repeated PSMA-targeting radioligand therapy of metastatic prostate cancer with (131)I-MIP-1095. *Eur J Nucl Med Mol Imaging* 2017; 44:950-9.
25. Nevedomskaya E, Baumgart SJ, Haendler B. Recent advances in prostate cancer treatment and drug discovery. *Int J Mol Sci* 2018; 19:E1359.
26. Saura C, Roda D, Rosello S, et al. A first-in-human phase I study of the ATP-competitive AKT inhibitor ipatasertib demonstrates robust and safe targeting of AKT in patients with solid tumors. *Cancer Discov* 2017; 7:102-13.
27. Olson WC, Israel RJ. Antibody–drug conjugates targeting prostate-specific membrane antigen. *Front Biosci (Landmark Ed)* 2014; 19:12-33.
28. Emmett L, Willowson K, Violet J, et al. Lutetium (177)PSMA radionuclide therapy for men with prostate cancer: a review of the current literature and discussion of practical aspects of therapy. *J Med Radiat Sci* 2017; 64:52-60.
29. Rathke H, Giesel FL, Flechsig P, et al. Repeated (177)Lu-labeled PSMA-617 radioligand therapy using treatment activities of up to 9.3 GBq. *J Nucl Med* 2018; 59:459-65.
30. Klotz L. Prostate cancer overdiagnosis and overtreatment. *Curr Opin Endocrinol Diabetes Obes* 2013; 20:204-9.
31. Bhatt JR, Klotz L. Overtreatment in cancer—is it a problem? *Expert Opin Pharmacother* 2016; 17:1-5.
32. Klotz L, Vesprini D, Sethukavalan P, et al. Long-term follow-up of a large active surveillance cohort of patients with prostate cancer. *J Clin Oncol* 2015; 33:272-7.
33. Herrera FG, Berthold DR. Radiation therapy after radical prostatectomy: implications for clinicians. *Front Oncol* 2016; 6:117.
34. Tendulkar R. Point: early salvage vs adjuvant radiotherapy for high-risk prostate cancer: serial PSA testing with early salvage radiotherapy is a viable option in most high-risk men. *Oncology (Williston Park)* 2017; 31:750-2.
35. Van Dessel LF, Reuvers SHM, Bangma CH, et al. Salvage radiotherapy after radical prostatectomy: long-term results of urinary incontinence, toxicity and treatment outcomes. *Clin Transl Radiat Oncol* 2018; 11:26-32.
36. Lewis B, Sartor O. The changing landscape of metastatic prostate cancer. *Am J Hematol Oncol* 2015; 11:11-20.
37. Unger JM, Cook E, Tai E, et al. The role of clinical trial participation in cancer research: barriers, evidence, and strategies. *Am Soc Clin Oncol Educ Book* 2016; 35:185-98.
38. Spratt DE, Osborne JR. Disparities in castration-resistant prostate cancer trials. *J Clin Oncol* 2015; 33:1101-3.
39. Randolph SD, Cary MP, Gonzalez-Guarda RM. The use of technology for health information for African American Men. *J Health Commun* 2017; 2:2.
40. Lawrence RA, McLoone JK, Psych B. Primary care physicians' perspectives of their role in cancer care: a systematic review. *J Gen Intern Med* 2016; 31:1222-36.
41. Thompson AE, Anisimowicz Y, Miedema B, et al. The influence of gender and other patient characteristics on health care-seeking behaviour: a QUALICOPC study. *BMC Fam Pract* 2016; 17:38.
42. Jacobs EA, Rolle I, Ferrans CE, et al. Understanding African Americans' views of the trustworthiness of physicians. *J Gen Intern Med* 2006; 21:642-7.
43. Durant RW, Legedza AT, Marcantonio ER, et al. Different types of distrust in clinical research among whites and African Americans. *J Natl Med Assoc* 2011; 103:123-30.
44. Tan SS, Goonawardene N. Internet health information seeking and the patient–physician relationship: a systematic review. *J Med Internet Res* 2017; 19:e9.
45. Pew Research Center Internet & Technology. The Internet and health. Available at: http://www.pewinternet.org/2013/02/12/the-internet-and-health. Accessed 6 May 2019.
46. Jiang SH, Beaudoin CE. Health literacy and the Internet: an exploratory study on the 2013 HINTS survey. *Comp Human Behav* 2016; 58:240-8.
47. Tonsaker T, Bartlett G, Trpkov C. Health information on the Internet: gold mine or minefield? *Can Fam Physician* 2014; 60:407-8.
48. American Cancer Society. Available at: https://www.cancer.org/. Accessed 6 May 2019.
49. Prostate Cancer Foundation. Available at: https://www.pcf.org/. Accessed 6 May 2019.
50. American Cancer Society. What should you ask your health care team about prostate cancer? Available at: https://www.cancer.org/cancer/prostate-cancer/detection-diagnosis-staging/talking-with-doctor.html. Accessed 6 May 2019.
51. Belkora J, Naguit M, Stupar L, et al. The effects of coaching patients to list questions before visiting cancer specialists: retrospective evaluation of visit preparation in a rural, underserved setting. *J Participat Med* 2017; 9:e14.
52. American Cancer Society Cancer Action Network. Help legislate federal and state cancer laws. Available at: https://www.cancer.org/involved/volunteer/acs-can.html. Accessed 6 May 2019.
53. Defense Health Program. Department of Defense Prostate Cancer Research Program anticipated funding opportunities for fiscal year 2018 (FY18). Available at: http://cdmrp.army.mil/pubs/press/2018/18pcrppreann. Accessed 6 May 2019.
54. Borza T, Kaufman SR, Shahinian VB, et al. Sharp decline in prostate cancer treatment among men in the general population, but not among diagnosed men. *Health Aff (Millwood)* 2017; 36:108-15.
55. Roth AJ, Weinberger MI, Nelson CJ. Prostate cancer: psychosocial implications and management. *Future Oncol* 2008; 4:561-8.
56. Imm KR, Williams F, Housten AJ, et al. African American prostate cancer survivorship: exploring the role of social support in quality of life after radical prostatectomy. *J Psychosoc Oncol* 2017; 35:409-23.
57. Skolarus TA, Wolf AM, Erb NL, et al. American Cancer Society prostate cancer survivorship care guidelines. *CA Cancer J Clin* 2014; 64:225-49.
58. Sun M, Cole A, Hanna N, et al. Adverse effects of ADT on cognitive function and dementia for men with prostate cancer: a meta-analysis and systematic review. *J Clin Oncol* 2017; 35(6 suppl):150.
59. IRONMAN: an international registry for men with advanced prostate cancer. Available at: https://ironmanregistry.org/. Accessed 6 May 2019.
60. Burg MA, Adorno G, Lopez ED, et al. Current unmet needs of cancer survivors: analysis of open-ended responses to the American Cancer Society Study of Cancer Survivors II. *Cancer* 2015; 121:623-30.