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Five-year follow-up study of a population-based prospective cohort of men with low-risk prostate cancer: the treatment options in prostate cancer study (TOPCS): study protocol

Jinping Xu ,[1] Michael Goodman,[2] James Janisse,[1] Michael L Cher,[3] Cathryn Hufford Bock[4]

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[1]Family Medicine and Public Health Sciences, Wayne State University School of Medicine, Detroit, Michigan, USA
[2]Epidemiology, Rollins School of Public Health, Emory University, Atlanta, Georgia, USA
[3]Urology, Wayne State University School of Medicine, Detroit, Michigan, USA
[4]Oncology, Wayne State University School of Medicine, Detroit, Michigan, USA

Correspondence to
Jinping Xu; jxu@med.wayne.edu

ABSTRACT

Introduction Active surveillance (AS) is recommended for men with low-risk prostate cancer (LRPC) to reduce overtreatment and to maintain patients' quality of life (QOL). However, whether African American (AA) men can safely undergo AS is controversial due to concerns of more aggressive disease and lack of empirical data on the safety and effectiveness of AS in this population. Withholding of AS may lead to a lost opportunity for improving survivorship in AA men. In this study, peer-reviewed and funded by the US Department of Defense, we will assess whether AS is an equally effective and safe management option for AA as it is for White men with LRPC.

Methods and analysis The project extends follow-up of a large contemporary population-based cohort of LRPC patients (n=1688) with a high proportion of AA men (~20%) and well-characterised baseline and 2-year follow-up data. The objectives are to (1) determine any racial differences in AS adherence, switch rate from AS to curative treatment and time to treatment over 5 years after diagnosis, (2) compare QOL among AS group and curative treatment group over time, overall and by race and (3) evaluate whether reasons for switching from AS to curative treatment differ by race. Validation of survey responses related to AS follow-up procedures is being conducted through medical record review. We expect to obtain 5-year survey from ~900 (~20% AA) men by the end of this study to have sufficient power. Descriptive and inferential statistical techniques will be used to examine racial differences in AS adherence, effectiveness and QOL.

Ethics and dissemination The parent and current studies were approved by the Institutional Review Boards at Wayne State University and Emory University. Since it is an observational study, ethical or safety risks are low. We will disseminate our findings to relevant conferences and peer-reviewed journals.

Strengths and limitations of this study

- ► This study takes advantage of one of few contemporary, population-based, prospective longitudinal cohort studies that specifically focus on low-risk prostate cancer and active surveillance (AS).
- ► This cohort included a relatively high proportion (~20%) of African American (AA) men.
- ► This study will compare treatment outcomes between the three major treatment options (AS, surgery and radiation) over time overall and by race (White vs AA).
- ► This study will provide much-needed empirical data on the safety and effectiveness of AS in AA population.
- ► We used self-reported race in the study.

INTRODUCTION

Widespread prostate-specific antigen (PSA) screening has resulted in a greater proportion of patients newly diagnosed with low-risk prostate cancer (LRPC) that is unlikely to cause significant morbidity or mortality.[1–3] Curative treatment for LRPC may not improve survival while adversely impacting quality of life (QOL) due to its effect on sexual, urinary and bowel function.[4–6] Due to growing concerns about overtreatment of LRPC, active surveillance (AS) has become increasingly accepted as a safe and effective treatment choice,[7 8] and recent guidelines recommend AS as the preferred option for most men with LRPC.[9–11] In spite of these recommendations, AS is largely underutilised in the USA although its use has been increasing in recent years, with significant geographical variations.[12–15]

Prostate cancers that are low-risk (defined as PSA <10 ng/mL, Gleason score ≤6 and clinical stage ≤T2a)[16 17] are less likely to progress during a man's lifetime and often can be safely managed conservatively, with AS or watchful waiting (WW). AS is a newer strategy that involves a rigorous surveillance protocol with serial testing (PSA testing,

digital rectal examination (DRE), prostate imaging and prostate biopsy) to monitor for disease progression over time and offer selective curative intervention, whereas WW is a less intensive observation approach without curative intent.[9] It should be underscored, however, that the two terms have often been used interchangeably in scientific literature. Likewise, clinicians and patients do not use the terms AS and WW according to their precise definitions, as we found in our focus group study.[18] Recent reports confirmed the increasing use of AS (~40%) in the USA,[12–14] which is much higher than earlier reports (~10%) by us and others.[19 20] Our most recent preliminary data show even higher initial AS adoption rate (~50%) among men diagnosed with LRPC, however, we also observed racial and geographical differences in the AS adoption rate. Even within one state, the use of initial AS varied widely across urology practices (27%–80%), even after accounting for differences in patient characteristics.[12]

Despite increased use of AS in the USA and globally,[13 14 21] there remains no consensus regarding patient selection and follow-up protocols; multiple published protocols and guidelines outline divergent monitoring intervals and tests.[8 22–25] For example, the frequency of follow-up biopsy varies between programmes, and new tests such as MRI and genomic tumour profiling are starting to be integrated into protocols, but there is a lack of prospective data comparing the long-term outcomes among these differing approaches.[26] Most physicians consider patient characteristics such as age, comorbidities and history of compliance in addition to clinical characteristics of prostate cancer when deciding who is an appropriate candidate for AS and when it should be discontinued.[21 26 27] However, the various factors that may influence a patient's decisions to initiate, adhere to and discontinue AS are still poorly understood.[28 29] Better understanding of these factors are important, especially since treatment pathways for men with LRPC vary widely by countries as well as within a country and within a health system.[12–14 25 26] Although published AS cohorts differ by protocol, reported rates of metastatic disease and prostate-cancer-specific mortality are exceedingly low within 15 years.[3 30 31]

As data supporting the use of AS have been derived from cohorts of predominantly White men, the appropriateness of AS in African American (AA) patients remains controversial.[26 32 33] Given concerns that AA race may be associated with more aggressive cancers,[34–36] many have questioned whether AA men are appropriate candidates for AS.[37 38] Concerns of lost to follow-up while on AS is another barrier for AS. A recent report found that 10% of patients were lost to follow-up at 2 years while on AS, and AA race was independently associated with increased risk of loss to follow-up.[39] More recently, two reports are reassuring that AS appears to be safe and effective for Black men as for White men.[40 41] These findings suggest that with careful selection and monitoring, AS could prove safe in AA men.

To deny AA men the option of enrolment into an AS cohort based on the limited available evidence would result in the continued overtreatment of AA men with LRPC and lead to poorer QOL in AA survivors and widen the racial disparity in prostate cancer survivorship. Existing guidelines do not suggest any alterations to AS protocols based on race.[9–11] Some argued that in the absence of definitive data to support a more aggressive natural history of low risk LRPC in AA men, the use of AS in this population should be continued.[42] Should entry criteria for AS, interval of surveillance or threshold to treat be meaningfully modified for AA men? Since the contemporary AS cohorts have been limited by a lack of racial diversity, these questions remain largely unanswered. Furthermore, little has been published on how race influences patients' decisions to consider enrolment in AS protocols, QOL while on AS and/or adherence to AS. Understanding differences in the cancer-survivorship experience and QOL outcomes among AA men are critical to appropriately counsel patients and improve cultural sensitivity and reduce racial differences in survivorship care. Therefore, we established a population-based cohort of AA and White men with LRPC to evaluate these factors, and here present a description of the cohort and our 5-year follow-up protocol.

METHODS AND ANALYSES

Preliminary studies

This protocol extends follow-up of a population-based, prospective, longitudinal cohort study of men≤75 years, with LRPC diagnosed 2014–2017 to 5 years postdiagnosis. The study, titled 'Treatment Options for Prostate Cancer Study (TOPCS)', was originally funded by the American Cancer Society (ACS: RSG-13-164-01-CPPB, 7/1/2013-12/30/2019). We used standardised rapid case ascertainment (RCA) to identify newly diagnosed LRPC cases (defined as PSA <10 ng/mL, Gleason Score ≤6 and clinical stage ≤T2a) within two population-based Surveillance, Epidemiology and End Results (SEER) registry catchment areas (metropolitan Detroit and the state of Georgia). The RCA reviews pathology reports of malignancy from all area hospitals and clinical laboratories to identify newly incident cancer cases rapidly, usually within 3–4 months of diagnosis, allowing us to identify and contact men while they were in the process of making treatment decisions prior to initiation of therapy or immediately thereafter. Men who self-identify as any race other than AA/Black or White were excluded from the study. SEER registries have been utilised successfully as a cohort inception tool in other studies,[43 44] because this case source minimises selection bias, ensures that the cohort is a representative sample and is capable of RCA. Eligible patients were surveyed soon after their cancer diagnosis (baseline) to determine their initial treatment choice, factors influencing their choice, baseline QOL as well as demographic and tumour characteristics (table 1). All men who initially chose AS and a subset of cases who

Table 1 Patient-reported measures and timeline

Patient-reported measures	Baseline patient survey	2-year patient survey	5-year patient survey
Sociodemographics (eg, age, race/ethnicity, education, marital and employment status, income, insurance)	x		
Family history of prostate cancer	x		
Treatment chosen/received	x	x	x
Modified Charlson Comorbidity Index[83 84]	x		
General QOL (SF-12)[75]	x	x	x
Prostate-specific QOL (EPIC-26)[76]	x	x	x
Trust in Physician Scale[85]	x		
Perceived risk/severity of the cancer	x	x	x
Control Preference Scale[86]	x	x	x
Decision Regret Scale[67]	x	x	x
Decision Conflict Scale[87]	x		
Fear of Cancer scale[77 88]	x	x	x
Understanding of treatment options	x		
Information sources	x		
Decision influencing factors (eg, treatment efficacy, side effects, burden)	x	x	x
Names of treating physician(s)	x		
Beliefs/attitudes about AS[18]	x		
Health Literacy Scale	x		

AS, active surveillance; QOL, quality of life.

chose surgery or radiation at baseline were selected for a follow-up survey 2-year after diagnosis to see if they are still on AS or switched to curative treatment.

The baseline cohort includes 1688 eligible cases (~50% enrolment rate). The original study was designed to identify determinants of initial treatment choice of men with LRPC, and to compare QOL between AS and curative treatment groups at baseline and at first 2-year follow-up as well as racial disparities in AS adoption, adherence, rate and reasons for switching from AS to curative treatment. Medical records were requested for men who chose AS at baseline and completed a 2-year survey to confirm self-reported AS monitoring modality (urologist visits, PSA testing, biopsy, MRI and genetic testing), frequency, adherence and whether patients switched to treatment, and reasons for the switch.

Patient baseline data

Table 2 presents the baseline patients demographic characteristics and preliminary results. Overall, 79.4% were White and 20.6% were Black, with a mean age of 62.8 years (SD=6.9). Compared with White men, Black men chose AS less often (47.9% vs 59.2%, p<0.001), and radiation more often (24.6% vs 14.5%, p<0.001) with this difference being more pronounced in Georgia compared with Detroit (interaction, p<0.05). Comparing to men living in Detroit, men in Georgia chose AS less often (52.2% vs 60.8%, p=0.001) and radiation more often (22.8% vs 11.5%, p<0.001).

Patient 2-year follow-up data

For efficiency, we implemented specific eligibility criteria and a stepwise approach to define the 2-year follow-up sample (table 3). The specific criteria were as follows: (1) completed baseline survey 2-year prior to selection; (2) chose AS, WW, radiation or surgery as initial treatment choice and (3) met criteria for completeness of baseline survey (eg, not missing key questions or summary QOL data). To maximise the AS and AA proportions, all men who initially chose AS or WW, and all AA men regardless of initial choice or location, were selected for follow-up. To balance the numbers of men in the surgery or radiation group and for study efficiency, we made further adjustments based on the treatment distribution at each recruitment site. For example, since more than twice as many White men chose surgery than radiation in Detroit, we randomly selected 50% of the White men who chose surgery for inclusion in the 2-year survey. In contrast, as more White men chose radiation in Georgia, we randomly selected 50% the White men who chose radiation for inclusion in the 2-year follow-up. After assigning selection criteria, 1247 men were eligible for the 2-year survey and 1057 of these completed a survey (~85% response rate). We designed three versions of follow-up surveys: AS, WW and curative treatment, and men were sent the survey that corresponded with their reported initial treatment type. Our preliminary analysis of 2-year follow-up data indicated that 19.7% of men originally on AS switched to curative

Table 2 Baseline demographic characteristics by race (n=1688)

Variable	White (n=1341) (79.4%)	Black (n=347) (20.6%)	P value
Location			0.703
Detroit	738 (55.0)	187 (53.9)	
Georgia	603 (45.0)	160 (46.1)	
Treatment choice			<0.001
WW	15 (1.1)	4 (1.2)	
AS	790 (59.2)	162 (47.9)	
Radiation	194 (14.5)	83 (24.6)	
Surgery	314 (23.5)	77 (22.8)	
Other	20 (1.5)	9 (2.7)	
Age (mean±SD)	63.3±6.8	60.8±7.0	<0.001
<65	724 (54.0)	229 (66.0)	<0.001
≥65	617 (46.0)	118 (34.0)	
Education			<0.001
≤High school	192 (14.6)	114 (33.6)	
Some college	431 (32.8)	134 (39.5)	
College graduate	377 (28.7)	55 (16.2)	
≥Graduate	313 (23.8)	36 (10.6)	
Income			<0.001
< $70 000	470 (38.2)	236 (74.7)	
≥ $70 000	761 (61.8)	80 (25.3)	
# Comorbidities (mean±SD)	0.8±1.1	1.1±1.3	<0.001
0	653 (48.9)	140 (40.8)	0.004
1	422 (31.6)	111 (32.4)	
2+	260 (19.5)	92 (26.8)	
Marital status			<0.001
Married/partnered	1159 (86.9)	212 (62.9)	
Not married/partnered	174 (13.1)	125 (37.1)	
Employment			<0.001
Full/part time	771 (57.8)	146 (43.2)	
Unemployed	562 (42.2)	192 (56.8)	

AS, active surveillance; WW, watchful waiting.

Table 3 Two-year demographic characteristics by race (n=1057)

Variable	White (n=850) (80.4%)	Black (n=207) (19.6%)
Location		
Detroit	512 (60.2)	105 (50.7)
Georgia	338 (39.8)	102 (49.3)
Treatment choice at baseline		
WW	6 (0.7)	1 (0.5)
AS	605 (71.2)	98 (47.3)
Radiation	104 (12.2)	62 (30.0)
Surgery	135 (15.9)	45 (21.7)
Other	0 (0)	1 (0.5)
Age (mean±SD)	63.3±6.7	61.1±6.5
<65	462 (54.4)	139 (67.1)
≥65	388 (45.6)	68 (32.9)
Education		
≤High school	94 (11.2)	58 (28.0)
Some college	269 (31.9)	85 (41.1)
College graduate	242 (28.7)	38 (18.4)
≥Graduate	238 (28.2)	26 (12.6)
Income		
< $70 000	261 (33.2)	142 (72.8)
≥ $70 000	525 (66.8)	53 (27.2)
# Comorbidities (mean±SD)	0.8±1.1	1.1±1.3
0	411 (48.5)	89 (43.0)
1	270 (31.9)	65 (31.4)
2+	166 (19.6)	53 (25.6)
Marital status		
Married/partnered	741 (87.3)	129 (62.6)
Not married/partnered	108 (12.7)	77 (37.4)
Employment		
Full/part time	483 (57.0)	85 (41.7)
Unemployed	465 (43.0)	119 (58.3)

AS, active surveillance; WW, watchful waiting.

treatment before the 2-year follow-up. For all men who originally chose AS and WW and who completed a 2-year survey, we requested consent to retrieve medical records (consent rate ~50%). The records are being abstracted to validate patient self-report AS adherence, to tease out true WW from AS, identify reasons for initiating definitive treatment, patterns of use of MRI and genetic testing, and to determine the variability in AS protocols.

Hypothesis/objective

Guided by an integrative model of health behaviours and decision-making, our *central hypothesis* is that AS is an equally effective and safe long-term option for AA and White men with LRPC with appropriate monitoring. However, given concerns of more aggressive cancer and higher risk of loss to follow-up, we hypothesise that compared with White men, AA men who initially chose AS to have a lower AS adherence rate, higher switch rate from AS to curative treatment and shorter time to curative treatment during the first 5 years after diagnosis. We also hypothesise that men who adopted AS have similar mental, but better physical, QOL compared with men who received curative treatment regardless of race. We will test these hypotheses in data from ongoing 5-year follow-up of our existing large contemporary population-based cohort of 1367 (~18% AA) men prospectively recruited soon after their diagnosis of LRPC from two geographical locations. The objectives of this project are to (1) determine any racial differences in AS adherence, switch rate from AS to curative treatment and time to treatment over 5 years after diagnosis, (2) compare QOL among AS group and

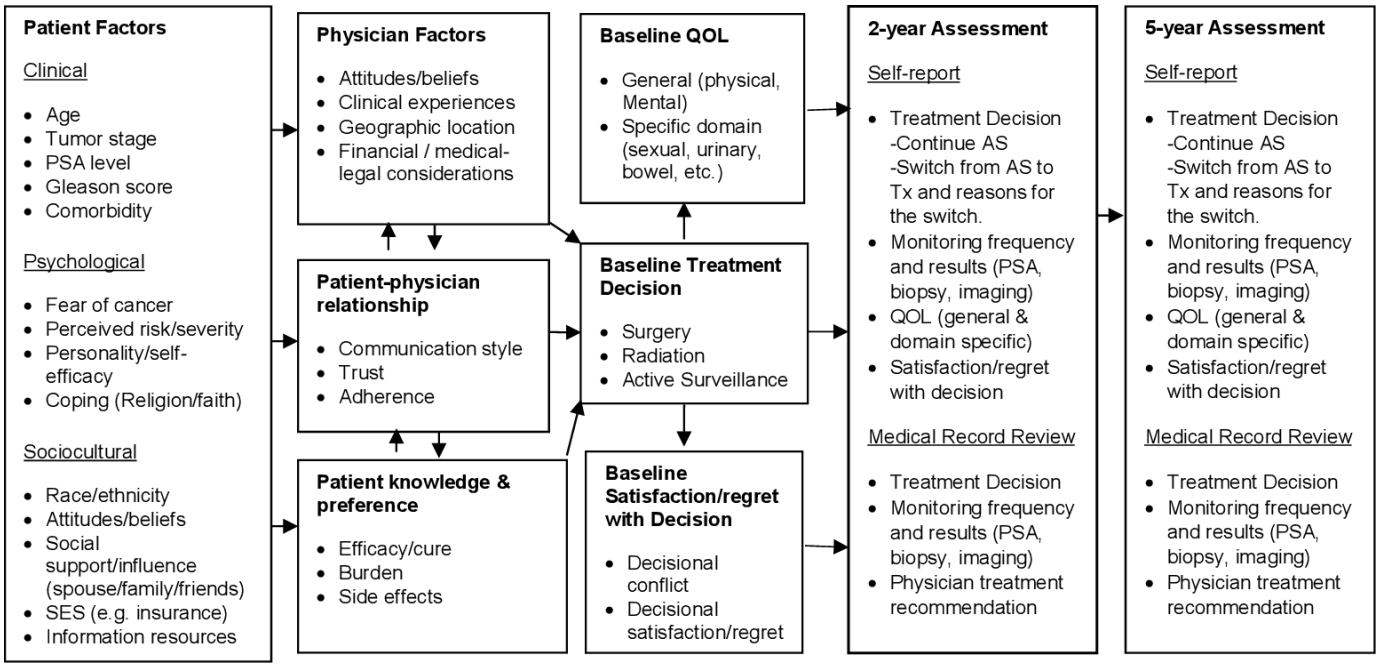

Figure 1 TOPCS conceptual model. AS, active surveillance; PSA, prostate-specific antigen; QOL, quality of life; SES, socioeconomic status; TOPCS, Treatment Options for Prostate Cancer Study.

curative treatment group overtime, overall and by race and (3) evaluate whether reasons for switching from AS to curative treatment differ by race.

Research strategy

Our conceptual model (figure 1) is largely informed by health behaviour models, treatment decision-making[45–47] and findings of our research programme to date.[18 19 48–51] Our model illustrates hypothesised associations between *patient factors* and *physician factors and the patient–physician relationship*, all of which, in turn, influence patient's treatment choice, adherence and satisfaction with decision, and subsequent QOL. *Patient psychological factors*, particularly fear of cancer progression can influence their decision. *Patient sociocultural factors* such as race, socioeconomic status (SES), treatment-related beliefs, social support and information sources may influence a patient's knowledge and preference. The selection of *physician factors* in our model was informed by findings from our study of urologists,[27] and others,[52] as well as literature on barriers to physician's adherence to practice guidelines.[53 54]

A major focus of our study is on racial disparities in different treatments.[55] *Sociocultural factors* such as race and SES influence patients' beliefs/attitudes about cancer, treatment options[56–58] and patient's trust in physicians.[59] The reverse may also be true; physicians may have attitudes/beliefs towards minority patients, which may lead to a differential approach and/or recommendation to minority patients.[60 61] Therefore, *patient's knowledge and preferences* about treatment options may be different across racial groups.[62 63] After the treatment decision has been made, men may feel satisfied or dissatisfied with the treatment itself and/or the process by which the treatment was decided on. Since all curative treatments for LRPC have significant side effects,[64] treatment decision-making involves value tradeoffs which could lead to high decisional conflict.[65 66] Although decisional regret is generally low initially, regret may increase significantly with longer follow-up, particularly in men treated with surgery, and is associated with QOL.[6 67–69] Men expressing regret over treatment choice have poorer health-related QOL.[69 70] Black men and men with lower SES are more likely to regret their decision and have worse QOL.[71–73]

Patient 5-year follow-up population and sampling strategy

We will resurvey all men who completed a baseline survey and were eligible for the 2-year survey. This allowed obtaining more robust 5-year follow-up data even though some of the participants did not complete the 2-year survey. Thus, we will include those selected for the 2-year survey but passively refused (passive refusals) as well as those men who were randomised out of 2-year survey (figure 2). After assigning selection criteria, 1367 men are eligible for the 5-year survey. The 5-year follow-up survey is administered approximately 5 years after diagnosis. We expect about 1090 of these men to complete the 5-year survey with a response rate of 80%. The literature suggests 24%–40% of AS men may switch to curative treatment within 5 years, either due to objective findings of cancer growth or patient's anxiety with untreated cancer.[22 30] Our data showed that 19.7% AS men switched to treatment at 2year follow-up.

Data collection and management

For the 5-year follow-up study, we use study protocol and procedures similar to those described above for the 2-year follow-up study. Briefly, as eligible cases are identified, a research assistant mails them a packet that includes: (a) an

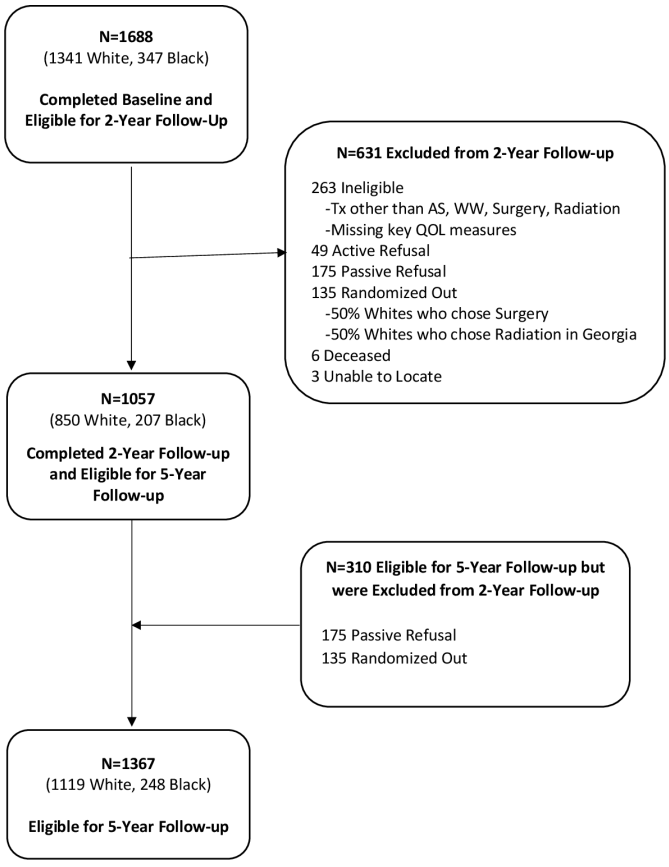

Figure 2 TOPCS sample flow chart for 2-year and 5-year follow-up studies. AS, active surveillance; QOL, quality of life; TOPCS, Treatment Options for Prostate Cancer Study; WW, watchful waiting.

information sheet with all the elements of a consent form except a signature line and including the patient's rights as a research subject; (b) a letter containing instructions and a telephone number to call with questions/concerns; (c) the survey instrument; (d) the study brochure; (e) an addressed, stamped envelope for returning the completed instrument and (f) a $20 gift card as incentive. The letter asks respondents to return completed surveys within 2 weeks of receipt. We employ a modified Dillman method to encourage response.[74] For men who may have low literacy or difficulty reading, we offer to conduct the questionnaire by telephone as we did with <5% of our preliminary study sample. If men do not want to participate in either the self-administered or telephone survey, we ask them to complete a brief telephone survey which will comprise 10–15 key questions and take 5–10 min to complete. The brief phone survey asks if they are still under monitoring versus received treatment, the reason(s) that they switched, a few questions regarding urologist recommendation, and education level. These data will be entered into a separate database and merged to the main data set to compare responses from respondents to non-respondents.

Patient 5-year follow-up survey instrument

The 5-year follow-up survey includes the same validated QOL measures as in the baseline and 2-year survey (table 1): 12-Item Short Form Health Survey (SF-12),[75] Expanded Prostate Cancer Index Composite Short Form (EPIC-26),[76] fear of cancer[77] and the Decision Satisfaction/Regret Scale,[78] which was modified based on existing scales.[78 79] To help understand some of the nuances of the reasons patients adopt, adhere to and/or exit AS, we developed the subsection of the survey instrument based on our findings from qualitative studies of men (and their spouses) who had been on AS as well as the in-depth interviews of 15 practicing urologists.[18] In addition to asking about time and frequency of urologist visits, PSA testing, DRE, prostate biopsy and any type of active treatment received and the reason(s) for the treatment, we include questions regarding the use of newer emerging technology (eg, parametric MRI imaging, genomic testing and other biomarkers) that has been used in clinical practice to improve AS monitoring. Among the completed 2-year follow-up surveys, we have noticed a significant proportion of men reported having MRI and/or genomic testing, which were also confirmed from the medical record abstraction.

Medical record abstraction

For all men who were still on AS at the time of the 2-year survey, we send a new consent form for medical record request and review for them to sign and return after they return their 5-year survey. We then request medical records from their urologists. The records are being abstracted to determine the AS protocol including testing method, frequency, intensity and adherence, as well as any reasons for switching to curative therapy or remaining on AS. The medical record review will allow us to validate patient self-report, determine the variability in AS protocols, use of newer technologies (such as MRI and genomics) and urologists' recommendations over time.

Sample size and analysis plan

Using the estimated response rate of 80%, we expect to obtain 5-year survey from ~1090 (18% AA) men by the end of this study and accomplish our aims. To compare adherence and switch to curative treatment between AA and White men, 2×2 χ^2 tests of independence will be performed. Adherence and switching will be analysed separately. CIs for the difference in proportions between AA and White men will also be constructed. To evaluate time to curative treatment, the survival function for switching for each race will be estimated using Kaplan-Meier curves. To compare the curves between AA and White men, the log-rank test will be performed. For adherence, we are assuming that 90% of White men will adhere. Using a two-tailed alpha of 0.05, we will have power of 0.82 to detect a drop in adherence to 78% for AA men.

To model changes in QOL across time and compare changes between treatment groups and race, linear mixed models will be employed. Each QOL measure will be analysed separately. In the models, QOL will be the outcome with three time points. Treatment type (AS and curative) and race (AA and White) will be the main

predictors. Control variables will include patient location and patient characteristics (eg, knowledge about AS, fear of cancer, SES) as well as clinical variables (eg, changes in PSA or Gleason score). Initially, an intent to treat design will be employed with all patients who initially chose AS being in the AS group even if they have switched to curative treatment during the follow-up period. Secondary analyses will examine if changing to curative treatment during the study affected QOL by breaking treatment into three groups (AS, curative at baseline and switched to curative during the study). Of particular interest for these analyses are differential changes across time for the AS and curative treatment groups (treatment by time interaction) and overall racial differences in QOL (main effect for race). Using a two-tailed alpha of 0.05, we will have power of at least 80% to detect an effect size of f=0.11 (which is a small effect size as defined by Cohen)[80] for both tests of interest.

To evaluate reasons for switching from AS to curative treatment and whether these reasons differ by race, a Cox proportional hazard model will be used. Potential predictors will come from the conceptual model presented in figure 1 (eg, fear of cancer and concern of treatment side effects). To determine if reasons differ by race, appropriate race by predictor interaction terms will be included in the model. Based on our 2-year data, we are assuming an incidence ratio of 0.10 (20% of men switched to curative treatment over 2-year period). With a two-tailed alpha of 0.05, we will have power of approximately 80% to detect a HR of 0.5 for effects of interest.[81]

Patient and public involvement

Both White and AA men with a diagnosis of low LRPC who chose AS and their spouses were interviewed in four separate focus group discussions at the beginning of the parent study,[18] information from which contributed to the development of the survey questions related to AS decision and adherence. Practicing urologists (n=15) in both study sites were individually interviewed, information from which contributed to the development of urologist survey questions as well as patient survey questions in the parent study (not published). A summary of the overall research findings will be sent to study participants through our TOPCS newsletter.

Ethics and dissemination

The parent and current studies were approved by the Institutional Review Boards at Wayne State University and Emory University. Since it is an observational study, ethical or safety risks are low. We will disseminate our findings to relevant national and international conferences and peer-reviewed journals.

DISCUSSION

Despite increased use of AS in the USA and globally,[12 13] there remains no consensus regarding patient selection and follow-up protocols.[24 25 82] As data supporting the use of AS have been derived from cohorts of predominantly White Americans, the appropriateness of AS in AA patients remains highly controversial.[25 26 32] Population-based prospective AS cohorts with a larger proportion of AA men and longer follow-up is much needed. This study takes advantage of one of few contemporary, population-based, prospective longitudinal cohort studies that specifically focus on LRPC and AS. With the well-characterised baseline and 2-year follow-up data, we propose to extend the study with longer follow-up (5-year after diagnosis) to provide the much-needed empirical data on the AS adherence and effectiveness for AA men comparing to White men in the same cohort over time. This research is designed to answer those important research questions about racial disparities in AS adherence, effectiveness and QOL outcomes over 5 years after prostate cancer diagnosis. The research protocol (DOD:#W81XWH1910794, PI: JX) was peer-reviewed and funded by the Department of Defense of the USA for the period of 15 September 2019 through 14 September 2022. As very long-term follow-up (≥10 years) is needed to comprehensively evaluation prostate cancer outcomes, we plan to obtain additional funding to extend follow-up for this cohort of study participants.

Contributors Study planning, conception and design: JX, CHB and JJ; study conduct, data collection: JX, CHB and MG; data analysis and interpretation of results: JX, JJ, CHB, MG and MLC; draft manuscript preparation: JX, CB and JJ; revising critically for important intellectual content: JX, CHB, JJ, MG and MLC. All authors reviewed the results and approved the final version of the manuscript: JX, CHB, JJ, MG and MLC. JX accepts full responsibility for the manuscript and the conduct of the study, had access to the data and controlled the decision to publish.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

ORCID iD

Jinping Xu http://orcid.org/0000-0002-1429-2783

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