

## Research Article

## Survey on the practice of active surveillance for prostate cancer from the Middle East



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## ABSTRACT

**Background:** Prostate cancer is the most common cancer among Lebanese men. Management of prostate cancer includes medical, radiological, and surgical intervention. In addition, active surveillance (AS) is proven as a valid option in patients with low-risk prostate cancer. Currently, data from the Middle East about AS are scarce. The aim of this study is to assess the rate of implementation of AS by physicians, determine the selection and follow-up criteria used by physicians, and identify potential barriers to its widespread adoption.

**Methods:** After receiving ethical approval, a LimeSurvey electronic questionnaire was mailed to 206 eligible urologists, oncologists, and radiation oncologists registered in the order of physicians in Lebanon. The questionnaire included dichotomous, multiple choice questions, and multiple answer questions. The 23 questions tackled sociodemographic information, physician's attitude toward AS, and their current practices. Predictors of AS use were identified using the chi-squared and Fisher's exact test. Then, multivariate logistic regression model for the predictors of AS practice was conducted.

**Results:** The response rate was 25%, and the analysis was run on 52 respondents. Although most of the respondents agreed that AS is a valid modality for low-risk prostate cancer, only 34 (65.4%) of them had patients on active surveillance. The rate of patients on AS was also very low. Urologists, physicians with >15 years of experience, and those who practiced in a university hospital were all predictors of AS usage ( $p = 0.005$ ;  $p = 0.002$ ;  $p = 0.025$ , respectively). However, physicians with fear of patient noncompliance had the odds of resorting to this modality [odds ratio (OR) = 0.07 (0.01 – 0.76)].

**Conclusion:** The main obstacles to implementing AS were fear of patient noncompliance and lack of national awareness as well as acceptance among the Lebanese uro-oncological body. Efforts to decentralize knowledge and expertise to new health-care practitioners and community hospitals would encourage its implementation.

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## 1. Introduction

Lebanon has been found to have the highest prostate cancer incidence rate among the Arab countries with an age-standardized incidence rate increase from 29.9 per 100,000 in 2003 to 39.2 per

100,000 in 2008, making prostate cancer the leading cancer among Lebanese men<sup>1,2</sup>. Few data from the region are available regarding the stage at prostate cancer diagnosis; however, a recent retrospective series from our institution identified 25% of patients presenting with metastatic disease<sup>3</sup>.

The classic approach to localized prostate cancer management is immediate intervention such as radiation or surgery. Nevertheless, in patients with low-risk prostate cancer, active surveillance (AS) offers an alternative option of actively monitoring the tumor progression in selected patients based on tumor characteristics<sup>4</sup>. This process of monitoring and follow-up allows for therapeutic intervention when warranted.<sup>4</sup>

Several trials have investigated the safety of AS in patients with prostate cancer. In 2012, the Prostate Cancer Intervention versus

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Observation Trial (PIVOT) study trial compared radical prostatectomy to observation in low-risk patients and concluded that there was no significant difference in all-cause or prostate cancer mortality between the two groups.<sup>5</sup> This study marked a major step forward for AS practice. In contrast, the recently reported the Prostate Testing for Cancer and Treatment ( ProtecT) trial compared AS with surgery plus radiotherapy and reported that the latter was associated with lower incidences of both progression and metastasis.<sup>6</sup> It is important to note that active monitoring in the ProtecT trial was different from the current practice of active surveillance. In the past few years, several AS protocols have been developed and followed in different institutions as shown in [Appendix 1](#), with no consensus so far.<sup>7</sup>

There has been no data published from the Middle East region regarding the adoption of AS or the utilization rates of specific protocols. The aim of this study was to assess the rate of implementation of AS protocols, the selection and follow-up criteria used, and to identify potential barriers to its widespread adoption among physicians from our region.

## 2. Materials and Methods

### 2.1. Study design

A cross-sectional survey study was conducted between October 2016 and March 2017 among urologists, oncologists, and radiation oncologists registered in the Lebanese order of physicians who practice in public and private institutions. After receiving approval from the institution's ethical committee, the Lebanese order of physicians was contacted to get the electronic address of the 206 eligible physicians. An electronic LimeSurvey questionnaire composed of 23 multiple choice questions was constructed and mailed to the physicians inquiring on their practice of active surveillance. Two reminders were also sent, each two weeks apart, in case of nonresponse.

### 2.2. Research instrument construction

An English questionnaire was constructed into three parts: sociodemographic information, physician's attitude toward AS, and their current practices ([Appendix 2](#)). The demographic section recorded the physicians' specialty, their years of experience, and the type of hospital where they practiced. The second section captured the physicians' attitude on the role of AS in low-risk prostate cancer management, their reluctance to its adoption, and perceived barriers to its implementation. In the last section, the questionnaire gathered information on the rate of AS in the physicians' clinics, the proportion of low-risk patients on AS, and the protocol physicians resorted to. The questionnaire included dichotomous, multiple choice, and multiple answer questions. In addition, the questionnaire was reviewed by the writing center at our institution for proper question formulation, usage of familiar words, and screening for double-barrel or double-biased questions, thus improving its reliability. Content validity was ensured through expert opinion in each of the urology, oncology, and radiation oncology experts from our institution. The final version of the questionnaire was developed based on their recommendations.

### 2.3. Statistics

Descriptive analyses were carried out by calculating the mean and standard deviation for continuous variables and number and percent for categorical variables. The predictors of AS practice including physicians' demographics, specialty, type of hospital where they practiced, and their attitude toward AS, were compared using the chi-squared test or Fisher exact test in case conditions did not apply. Then, a multivariate logistic regression with a stepwise approach for

the predictors of AS usage including physician's specialty (Urologist versus other specialties) in the initial frame was constructed. The model was adjusted for physicians' age, specialty, years of practice, barriers to adoption of AS by patients, and the barriers to adoption of AS by Lebanese physicians. No imputations were needed as there were no missing values. Data were entered and analyzed using the Statistical Package for the Social Sciences statistical package IBM SPSS Statistics for Windows, version 24 (IBM Corp., Armonk, N.Y., USA), and a  $p$ -value of  $>0.05$  was considered significant.

## 3. Results

The survey was sent to 206 eligible physicians, of which 52 (25%) completed the survey. Thirty-nine respondents were urologists (75%), 8 (15%) oncologists and 5 (10%) radiation oncologists ([Table 1](#)). Although 27 (52%) of them practiced in a university hospital, 25 (48%) practiced in a community hospital. Moreover, 24 (46%) reported having more than 10 years of experience in their field. The average age of the physicians was 45.5 years with a range of 30–75 years, and almost all were males (94%).

Half of the physicians recommended AS in a healthy patient whose life expectancy is more than 10 years with a low-risk localized prostate cancer [Gleason score 6, prostate-specific antigen (PSA) $<10$ , T1c] and 24 (46.2%) recommended radical prostatectomy. Most of the physicians (94.2%) believed that AS is valid and does not compromise the patients' survival. Most of the physicians (90.4%) believed that AS has an advantage over treatment in patients with low-risk prostate cancer as it preserves sexual activity and urinary continence.

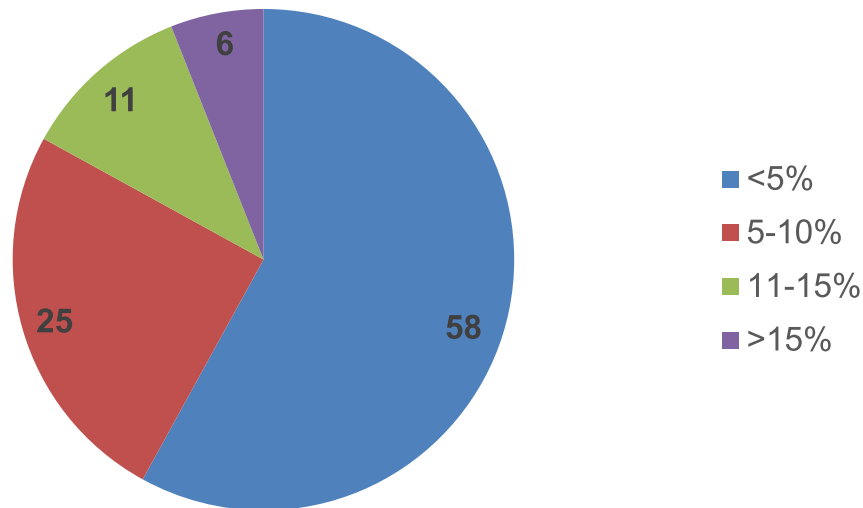
Despite these answers, only 34 (65.4%) of physicians had patients on active surveillance; and 30 (58%) of them had an AS rate less than 5% (zero inclusive) whereas only 3 (6%) of physicians reported an AS rate exceeding 15% ([Fig. 1](#)). Physicians who practiced AS were more likely to work in a university than community hospitals ( $p = 0.019$ ); yet, physicians' age, specialty, and years in practice did not differ ([Table 2](#)). Furthermore, physicians who believed that AS was a valid option in low-risk prostate cancer and those who saw that this modality was of interest to the patient were more likely to practice it,  $p = 0.01$  and  $p = 0.005$ , respectively. To investigate this discrepancy between advocacy and application of active surveillance, the physicians were asked about the reasons that would prevent them from offering AS to their patients and the perceived deterring factors that prevented its endorsement by the patient and physician. At the bivariate analysis, no predictors were found to be significant.

After adjusting for confounders, urologists were more likely to practice AS than other specialties ( $p = 0.005$ ). In addition, health practitioners in university hospitals and those with  $>15$  years of

**Table 1**  
The Characteristics of physicians treating prostate cancer ( $n = 52$ ).

Variables	X $\pm$ SD; n (%)
Age	45.5 $\pm$ 12.6
Male	49 (94.2%)
Practice	
University hospital	27 (51.9%)
Community hospital	25 (48.1%)
Specialty	
Urologist	39 (75.0%)
Oncologist	8 (15.4%)
Radiation oncologist	5 (9.6%)
Years of experience	
$<5$	19 (36.5%)
5–10	9 (17.3%)
10–15	3 (5.8%)
$>15$	21 (40.4%)

SD, standard deviation.



**Fig. 1.** Proportion of patients on active surveillance among urologists, oncologists, and radiation oncologists.

**Table 2**

Bivariate analysis of predictors of active surveillance among physicians.

Variables/questions	Active surveillance practiced	Active surveillance not practiced	p-value
	(n = 34)	(n = 18)	
	n (%)	n (%)	
Physician's age > 40	18 (52.9%)	7 (38.9%)	0.335
Male physicians	33 (97.1%)	16 (88.9%)	0.244
Specialty			0.546
Urologist	27 (79.4%)	12 (66.6%)	
Oncologist	4 (11.8%)	4 (22.2%)	
Radiation oncologist	3 (8.8%)	2 (11.1%)	
Years in practice			0.052
<10	17 (50.0%)	14 (77.8%)	
≥10	17 (50.0%)	8 (22.2%)	
Type of hospital			0.019
Community-based	12 (35.3%)	13 (72.2%)	
University hospital	22 (64.7%)	5 (27.8%)	
Q9- I think AS is a valid option in the treatment algorithm of patients with low-risk prostate cancer	34 (100%)	15 (83.3%)	0.01
Q10- I think AS will compromise the survival of my patient	2 (5.9%)	1 (5.6%)	0.962
Q11- Reasons not to offer AS as an option			
Fear of missing a cure opportunity	12 (35.3%)	8 (44.4%)	0.520
Lack of enough evidence in the literature	7 (20.6%)	2 (11.1%)	0.376
Patient anxiety	27 (79.4%)	17 (94.4%)	0.125
Legal liability	5 (14.7%)	2 (11.1%)	0.714
Absence of clear inclusion criteria/protocol	14 (41.2%)	6 (33.3%)	0.578
Q13- I think that patients are interested in active surveillance as a treatment option	24 (70.6%)	6 (33.3%)	0.005
Q-14 Barrier to accept AS by Lebanese patients			
Lack of knowledge/awareness	24 (70.6%)	14 (77.8%)	0.574
Anxiety	29 (85.3%)	17 (94.4%)	0.300
Financial	7 (20.6%)	3 (16.7%)	0.731
Compliance	22 (64.7%)	15 (83.3%)	0.146
Q15- Barrier to accept AS by Lebanese HCP			
Lack of experience	16 (47.1%)	11 (61.1%)	0.335
Financial constraint	11 (32.4%)	2 (11.1%)	0.077
Fear of losing patients	21 (61.8%)	15 (83.3%)	0.098
Notion that the Lebanese population has a more aggressive cancer	3 (8.8%)	1 (5.6%)	0.666
Absence of multidisciplinary service	23 (67.7%)	9 (50.0%)	0.216

HCP, Health-care practitioner; AS, active surveillance. Refer to [Appendix 2](#) for the detailed questionnaire.

experience in their field were predictors of AS practice ( $p = 0.002$  and  $p = 0.025$ ) [Table 3](#). Moreover, physicians who believed that their patients were interested in surveillance of the cancer were 11.2 (1.57 – 78.6) times more likely to use AS, whereas those who thought patient compliance was a barrier to its implementation had the odds of resorting to this modality [OR = 0.07 (0.01 – 0.76)].

The most used AS protocol was the Memorial Sloan Kettering Cancer Center for 21 (40.4%) patients, followed by the Johns

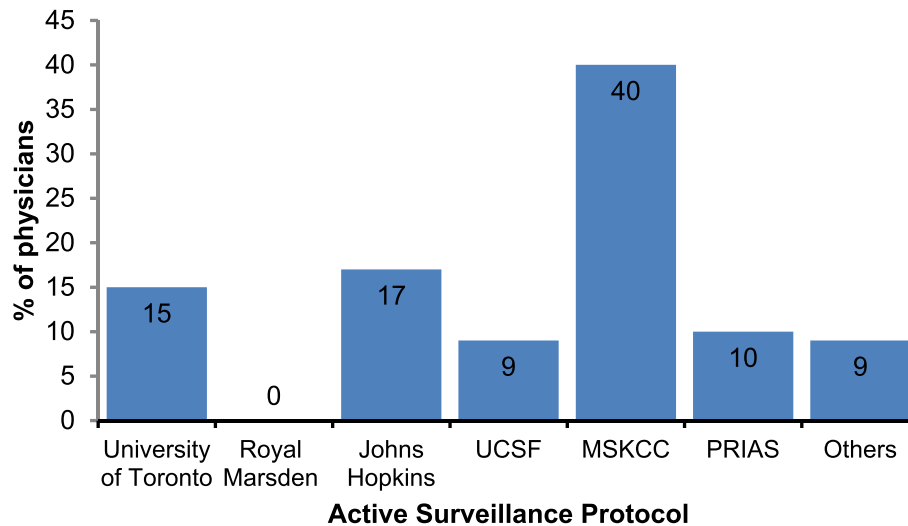
Hopkins for 9 (17.3%) patients and the University of Toronto for 8 (15.4%) patients ([Fig. 2](#)). However, none of the physicians used the old Royal Marsden inclusion criteria, which set the Gleason score at  $\leq 7$  (3 + 4) and PSA  $\leq 15$  ng/ml.

Most of the physicians (88.5%) chose the combination of PSA, digital rectal examination (DRE) every 3 months, and a yearly transrectal ultrasound-guided (TRUS) biopsy as the follow-up protocol. Besides, 60% of respondents used the

**Table 3**  
Multivariate analysis for the predictors of active surveillance practice among physicians.

Variable	Active surveillance practice	
	OR (95% CI)	p value
Urologists	182.6 (4.9 – 6,748.5)	0.005
University hospital	255.9 (8.1 – 8,091.7)	0.002
>15 years in Practice	17.4 (1.42 – 212.6)	0.025
I think that patients are interested in active surveillance as a treatment option	11.2 (1.57 – 78.6)	0.016
Compliance is a barrier to adoption of AS by patients	0.07 (0.01 – 0.76)	0.029

Adjusted for physician's age, specialty, years of practice, barriers to adoption of AS by patients, and the barriers to adoption of AS by physicians. AS, active surveillance; OR, odds ratio; CI, confidence interval.



**Fig. 2.** Proportion of physicians using different active surveillance protocol.

magnetic resonance imaging (MRI) before the TRUS biopsy at 1 year, and 86% of them reported integrating the MRI into their decision making; whether be for selecting patient, assessing progression, or guiding a targeted biopsy at one year. Confirmatory repeat biopsy at 3 months was rarely used. Most physicians (71.2%) agreed that upgrade on biopsy was the most important factor to initiate treatment, followed by PSA doubling time in <3 years (19.2%), and stage progression (9.6%).

#### 4. Discussion

AS is currently considered a valid option for patients with low-risk prostate cancer. Although this modality has been widely applied in the United States and Europe, there are scarce data regarding this practice in the Middle East.<sup>15</sup> Our study revealed that AS is practiced by only a fraction of physicians treating prostate cancer in Lebanon, mainly urologists, physicians long in the practice, and those practicing in university hospitals. Despite the fact that low-risk prostate cancer constitutes around 23–42% of all prostate cancer, this study demonstrated that even among those who practiced AS, the rate of patients on this surveillance was very low.<sup>16</sup> Furthermore, the answers to the questionnaire showed that patients' interest was an incentive for practicing AS whereas worries about patient compliance discouraged physicians.

In a large AS study in 2015, the Prostate Cancer Research International Active Surveillance (PRIAS) observed reluctance to undergo yearly biopsies despite rise in levels of PSA, attributing it to a lack of patient–physician compliance to the protocol.<sup>17</sup> This was also evident in our study where fear of lack of patient compliance dissuaded physicians from proposing AS.

A systematic review in 2018 by Kinsella et. al<sup>18</sup> explored the predictors of patient compliance to AS. It revealed that the etiology is multifactorial and attributed mainly to patients, physicians, and health policy–specific factors. In fact, patients were more likely to adopt AS if physicians recommended AS and when the relationship with their health-care providers was strong and trustful. Similarly, Gorin et. al<sup>19</sup> showed that the physician's influence was the major dividing factor for patients to accept active surveillance. This might indicate that AS adoption might have more to do with the physicians than the patients themselves. Why would the physicians be hesitant about offering AS as a treatment option to patients? In accordance with our study, urologists prolonged clinical experience, and practice in a university hospital were predictors of resorting to AS. These findings are reflective of the findings of Kinsella et. al<sup>18</sup> where awareness and acceptance by the uro-oncological community explained the rate of patients on AS. This could be explained by the fact that practitioners of AS were more likely to be experienced and probably concentrated in tertiary university hospitals.

Moreover, patient-specific factors including educational level, their perception of cancer risk, and their fear of side effect of treatment determined their choice of AS and their compliance. Similarly, in Lebanon, many still believe that prostate cancer is a fatal disease.<sup>20</sup> This might lead some patients to choose radical treatment or even seek a second opinion if offered AS. Hence, the fear of losing a patient to another physician might also explain why physicians might shy away from AS.

Lack of awareness and acceptance among the uro-oncological body in our region, reflected by the limited data available on active surveillance, can also be a factor in avoiding this modality. Hekal et. al<sup>15</sup> attempted to validate the Epstein criteria for AS in a

radical prostatectomy cohort from Saudi Arabia. They reported a 46% risk of upgrading, and 8.6% of the patients previously eligible for AS presented later with metastatic disease.<sup>15</sup> In a more recent report from Saudi Arabia, only 5% of patients presenting at a tertiary care center were eligible for AS, whereas 50% were metastatic at presentation.<sup>21</sup> Similarly, a study by Mukherji et. al.<sup>3</sup> in 2017 looked at the prostate cancer stage at presentation in a Middle Eastern cohort and found that 22.6% of patients presented with Stage 4 disease. A high proportion of patients presenting at an advanced stage could further increase the physician's reluctance to offer and enroll patients into AS.

Most of the physicians in Lebanon relied on the PSA, a DRE every 3 months, and a yearly TRUS biopsy as a follow-up protocol. This study did not look at follow-up beyond the first year. However, Loeb et. al.<sup>22</sup> used the Surveillance, Epidemiology, and End Results database to look at a cohort of 5,192 patients undergoing AS. The authors concluded that the percentage of patients having 1 or more PSA tests per year was greater than 80%, yet the percentage of patients undergoing biopsy was 13% beyond the 2<sup>nd</sup> year. The latter study concluded that over 5 years of AS, the testing standards of the Sunnybrook/Prostate Cancer Research International AS program and Johns Hopkins program were met by 11.1% and 5.0%, respectively.<sup>22</sup>

This study revealed that physicians in Lebanon relied heavily on the MRI in their clinical decision-making for prostate cancer. In contrast, Philippou et. al.<sup>23</sup> in 2015 reported that physicians in the UK rarely used MRI in the monitoring of men on AS and rather resorted to PSA and DRE. This is probably because of the nature of the health-care system in Lebanon where a large proportion of patients use private insurance, allowing the usage of more invasive yet conclusive modalities. In addition, although the role of MRI in AS has not been well defined yet, studies demonstrated that MRI fusion biopsy upgraded patients (10.3% to 40.7%), rendering them ineligible for AS.<sup>24</sup> Hence, the MRI might play a future role in refining the selection of patients for AS, thereby potentially improving the acceptance of AS among physicians and patients. Subsequently, these findings may warrant revision of the current AS inclusion criteria.<sup>24</sup>

Furthermore, although confirmatory TRUS biopsy after 3 months was rarely used among physicians in Lebanon, Philippou et al.<sup>23</sup> found that this was used among 29% of health practitioners treating prostate cancer in the United Kingdom. As for the trigger to start treatment, the authors revealed a broad agreement that tumor upgrading on repeat biopsy or an increase in tumor volume or percentage of core biopsies involved would prompt a recommendation for treatment.<sup>23</sup> This was also echoed in this study. Besides, while half of their respondents would initiate treatment based on sole evidence of rising PSA, only 19.2% of our respondents would initiate treatment.<sup>23</sup>

## 5. Limitations

This study has a small sample size because of a low response rate of 25.2%. This can be due to the fact that the information procured by from the order of physicians is outdated. Besides, non-

response can be attributed to the fact that not all physicians contacted treat prostate cancer patients. Therefore, this study captures very well the predictors of AS in Lebanon. Yet, further studies are needed to assess the trends of AS in the Middle East.

## 6. Conclusion

Although a proven and viable alternative, AS is yet to find its way into the practice in our region. The main obstacles to implementing AS were fear of patient noncompliance and lack of national awareness and acceptance among the Lebanese uro-oncological body. Efforts to decentralize knowledge and expertise to new health-care practitioners and community hospitals would encourage its implementation. Furthermore, the creation of unified and specific protocol for AS as well as the inauguration of a national surveillance database would also encourage both patients and physicians to adopt AS.

## Author Contribution

R.E.S. contributed to project development, data collection, data analysis, manuscript writing, and submission of the manuscript. M.M. contributed to project development, data collection, and data analysis. R.F.J. contributed to data analysis and manuscript writing. A.A. contributed to data collection. D.M. contributed to project development and supervision. A.E.H. contributed to project development, data collection, and manuscript writing and is the corresponding author.

## Research involving human participants and/or animals

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

This article does not contain any studies with animals performed by any of the authors.

## Informed consent

Informed consent was obtained from all individual participants included in the study.

## Conflict of interest

Mukherji reports grants, personal fees, and nonfinancial support from Astellas and Janssen, outside the submitted work.

All the other authors have nothing to disclose.

## Appendix 1. Inclusion criteria for active surveillance Protocols adapted from El Hajj et. al 2013.<sup>7</sup>

Protocol	Gleason	PSA level (ng/ml)	PSAD (ng/ml per ml)	Clinical Stage	Positive biopsies	Percentage single core involvement
University of Toronto <sup>8</sup>	≤3 + 3	≤10	-	-	-	-
Royal Marsden <sup>9</sup>	≤3 + 4	≤15	-	T1/T2a	≤50%	-
Johns Hopkins <sup>10,11</sup>	≤6	-	≤0.15	T1	≤2	≤50
UCSF <sup>12</sup>	≤6	≤10	-	T1/T2	≤1/3 of biopsies	≤50
MSKCC <sup>13</sup>	≤6	≤10	-	T1/T2	≤3	≤50
PRIAS <sup>14</sup>	≤6	≤10	≤0.2	T1/T2	≤2	-

PSA, prostate-specific antigen; PSAD, PSA density; UCSF, University of California San Francisco; MSKCC, Memorial Sloan Kettering Cancer Center; PRIAS, Prospective Randomized International Active Surveillance.

**Appendix 2****Electronic LimeSurvey Questionnaire about the Attitudes and Practice of Active Surveillance.****PART I**

1-Age \_\_\_\_\_

2-Sex

- Male
- Female

3- Specialty

- A-Urologist
- B-Oncologist
- C-Radiation Oncologist

4- Place of practice

- Community Hospital
- University Hospital

5- Number of years in practice:

- <5
- 5-10
- 10-15
- >15

6- Are you involved in the treatment decision of patients with prostate cancer?

- Yes
- No

**PART II**

8- Which primary treatment would you recommend in healthy patients (life expectancy &gt; 10 years) with low risk localized prostate cancer (Gleason 6, PSA&lt;10,T1c)

- Radical prostatectomy
- External beam radiation
- Active Surveillance
- Primary Androgen deprivation therapy
- Brachytherapy

9- Do you think active surveillance is a valid option in the treatment algorithm of patients with low risk prostate cancer?

- Yes
- No

10- Do you think that active surveillance could compromise patients' survival rates?

- Yes
- No

11- In your opinion, what are the reasons that prevent you from offering active surveillance as a treatment option? **(Please check all that apply)**

- Fear of missing a cure opportunity
- Not enough evidence in literature to support active surveillance
- Patient anxiety
- Legal liability
- Absence of clear inclusion criteria /follow up protocol

12-What is the main advantage of active surveillance over other treatment modalities?

- Conservation of sexual activity
- Conservation of continence
- Conservation of both sexual activity and continence
- Active surveillance is inferior to other treatment options

13- In your practice, do you feel that patients are interested in active surveillance as a treatment option?

- Yes
- No

14- In your opinion, what the barriers preventing Lebanese patients from accepting active surveillance? (**Please check all that apply**)

- Lack of knowledge and/or awareness
- Anxiety
- Financial
- Compliance
- Other (please specify) \_\_\_\_\_

15- In your opinion, what the barriers preventing Lebanese health providers from adopting active surveillance? (**Please check all that apply**)

- Lack of experience
- Financial constraints
- Fear of losing patients
- A notion that our population has more aggressive cancer
- Absence of prostate cancer multidisciplinary service
- Other (please specify) \_\_\_\_\_

### PART III

16- In your practice, do you have patients on active surveillance?

- Yes
- No

17- In your practice, what is the proportion of low risk prostate cancer patients in your practice that choose active surveillance as a treatment option?

- <5%
- 5%-10%
- 11%-15%
- >15%

18- Which active surveillance protocols do you apply for patient selection?

- University of Toronto
- Royal Marsden
- Johns Hopkins
- University of California San Francisco (UCSF)
- Memorial Sloan Kettering Cancer Center (MSKCC)
- Prostate Cancer Research International Active Surveillance (PRIAS)
- Other (please specify) \_\_\_\_\_

19- In your practice, do you integrate magnetic resonance imaging (MRI) in your decision making for prostate cancer treatment?

- Yes
- No

20- If you have answered "yes" to **question 19**; in your practice, what is the role of magnetic resonance imaging (MRI) in active surveillance?

- Inclusion/exclusion of patients
- Assessing progression
- Guiding a targeted biopsy at one year
- Other (please specify) \_\_\_\_\_

21- In your practice, which surveillance protocol do you use for active surveillance?

- Rebiopsy after 3 months followed by PSA and DRE every 3 months; and yearly TRUS biopsy
- PSA and DRE every 3 months; and yearly TRUS biopsy
- PSA and DRE every 3 months, yearly MRI then TRUS biopsy if needed
- Other (please specify) \_\_\_\_\_

23- In your opinion, what is the most important trigger for active treatment of prostate cancer?

- PSA doubling time <3 years
- Stage progression
- Upgrading on biopsy
- Other (please specify) \_\_\_\_\_

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