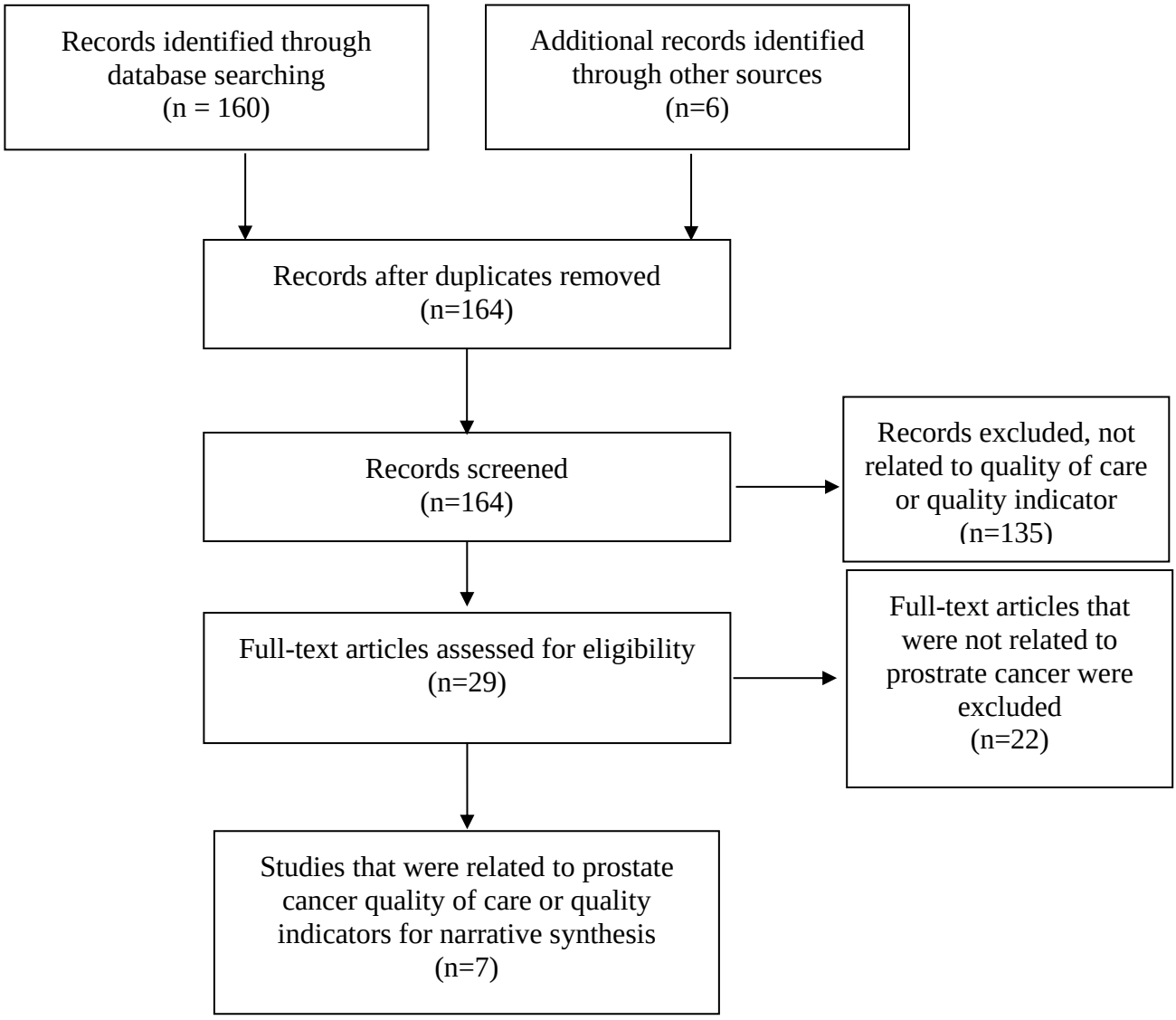
APPENDIX

Supplementary Fig. 1. Flow diagram for narrative literature search on broader quality indicators development in prostate cancer, which were useful for identifying indicators for active surveillance among low-risk prostate cancer.



Search terminology: (“Prostate cancer” [Mesh] OR “Prostate Neoplasms OR “Prostate malignancy”) AND (Quality indicators” or “Quality of care”), with literature assessed between a publication date of January 2005 and September 2019 (from Medline, Embase, CINAHL, and the Cochrane Library).

Supplementary Table 1. Manual for expert rating scale, categorizing the level of importance: RAND corporation[27]

Median importance									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Note: - Rating 1–3 meant that the indicator/covariate would not be a valid measure for valuating quality - Rating 4–6 meant that indicator/covariate would be uncertain - Rating 7–9 meant that the indicator would be a clearly valid measure									
Disagreement Index <1									
Disagreement Index ≥1									

There is expert opinion that the quality indicator is of low importance
There is disagreement among the expert opinion about the importance of the indicator
There is expert opinion that the quality indicator is of high importance

Example rating of how each expert panelist rated the proposed indicator

Expert ID	**#1**	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**	**#9**	**#10**	**#11**
Rating given (from 1–9)	9	9	x	9	9	9	9	7	9	7	9

DI: disagreement index; IQR: interquartile range.

Supplementary Table 2. Manual for disagreement index (DI) calculation based on IPRAS methods (Manual: RAND corporation[27])

Measure	Definition	How to calculate	Results
Median	An observation at the 50th percentile	50th percentile	9
Lower IPR	An observation at the 10th percentile	10th percentile	7
Upper IPR	An observation at the 90th percentile	90th percentile	9
IPR	The interpercentile range. It is a measure of dispersion of a distribution.	Upper IPR–Lower IPR	2
IPRCP	The central point of IPR	(Lower IPR+Upper IPR)/2	8
Asymmetry Index (AI)	The distance between the central point of the IPR and the central point of the 1–9 scale, i.e., 5	abs (5-IPRCP)	3
IPRAS	IPRAS=The interpercentile range adjusted for symmetry. It is a measure of the degree of asymmetry across the 9-point scale. Using the numbers supplied by the RAND document1: IPRAS=2.35+(1.5 * AI)	IPRAS= IPRr + (CFA * AI)	6.85
		IPRr is the interpercentile range required for disagreement when there is perfect symmetry, constant value set for IPRr=2.35 CFA is the correction factor for asymmetry, which is a constant set at 1.5 Thus, the final formula for IPRAS 2.35 + (1.5 * AI)	
Disagreement index (DI)	It is a measure which shows if there was wide or limited dispersion of panelist ratings	DI= IPR/IPRAS In summary, if the IPR of a particular indicator is larger than the IPRAS of that particular indicator, the indicator is rated with disagreement	0.29 0.29<1, therefore, there is low agreement
	If the DI is ≥1, then it indicates "extreme variation" in ratings. The lower the DI, the lower the level of disagreement (i.e., the higher the level of agreement/ better consensus)		
Note: "Unable to comment" responses were excluded when calculating the statistics.			

CFA: correction factor for asymmetry; IPR: interpercentile range; IPRAS: interpercentile range adjusted for symmetry.

Supplementary Table 3. Final expert panel participants [n=19]

Physicians	Medical speciality	Province of practice
Dr. Lorne Aaron	Urology	Quebec
Dr. Alejandro Berlin	Radiation oncology	Ontario
Dr. Bimal Bhindi	Urology	Alberta
Dr. Joseph Chin	Urology	Ontario
Dr. Brita Danielson	Radiation oncology	Alberta
Dr. Christopher French	Urology	Newfoundland and Labrador
Dr. Anil Kapoor	Urology	Ontario
Dr. Zachary Klinghoffer	Urology	Ontario
Dr. Michael Leveridge	Urology	Ontario
Dr. Christopher Morash	Urology	Ontario
Dr. Gerard Morton	Radiation oncology	Ontario
Dr. Kenneth Pace	Urology	Ontario
Dr. Nathan Perlis	Urology	Ontario
Dr. Frederic Pouliot	Urology	Quebec
Dr. Patrick Richard	Urology	Quebec
Dr. Fred Saad	Urology	Quebec
Dr. Alan So	Urology	British Columbia
Dr. Paul Toren	Urology	Quebec
Dr. Stanley Yap	Urology	Ontario

Note: Consent was obtained for all listed panel member to be listed as expert panel members in the final publication. The expert panel has good representation of practice setting (79% in academic hospital and 21% in community hospital setting).

Supplementary Table 4. Quality indicators for active surveillance for low-risk prostate cancer patients that were uncertain or rejected/consensus could not be reached

Indicators	Definition	Median (IQR) [range]	DI	Consensus (% with 7, 8, 9)	Consensus (% with 6, 7, 8, 9)
I. Structure indicators					
Managed by PCa specialist (urologist or radiation oncologist) who treats ≥10 NEW low-risk patients per year (AS volume)[*]	Percentage of all newly diagnosed patients managed by (higher-volume) physician with AS	7 (5–8) [1, 9]	2.25	58%	74%
II. Process indicators					
MRI received during AS enrollment	Percentage of patients on AS who had MRI testing during AS enrollment	5 (4–7) [1–8]	2.55	26%	37%
Low risk patients received AS at age ≥80 years[#]	Percentage of patients with AS ≥80 years at diagnosis (as opposed to watchful waiting)	7 (5–7) [2, 9]	1.61	53%	74%
DRE every 12 months	Percentage of patients on AS who had DRE testing every 12 months until definitive treatment or AS cessation	6 (5–8) [1, 9]	1.04	37%	58%
MRI received during AS followup	Percentage of patients on AS who had MRI testing during AS followup at least once	6 (5–7) [3, 9]	1.09	37%	58%
III. Outcome indicators					
10 years treatment-free survival	Percentage of patients on AS who discontinue AS within 10 years from diagnosis	6 (5–9) [3–9]	1.55	47%	74%

[*]10 (new AS cases per year) was chosen based on the median number of NEW AS cases seen by physicians in Ontario. The prior target of 100 cases per year was felt to be too high by panelists but most supported some measure of volume. [#]Age limit changed from ≥75 to ≥80 years based on lack of consensus among panelists. After age 80 patients on AS should be switched to watchful waiting. ACG: adjusted clinical groups; AS: active surveillance; DI: disagreement index; DRE: digital rectal examination; IQR: interquartile range; MRI: magnetic resonance imaging PCa: prostate cancer; PSA: prostate-specific antigen.

Supplementary Table 5. Recommended key predictors/explanatory covariates of active surveillance care and list of uncertain or rejected covariates					
Key predictor/ explanatory variables	**Definition**	**Median (IQR) [range]**	**DI**	**Consensus (% with 7, 8, 9)**	**Consensus (% with 6, 7, 8, 9)**
Recommended key predictor/explanatory variables for active surveillance for low-risk prostate cancer patients					
Age	Age at diagnosis	8 (5–8) [3-9]	0.75	69%	74%
PSA	PSA at diagnosis	7 (5–9) [5–9]	0.74	58%	74%
Gleason grade	Gleason grade at diagnosis	9 (8–9) [7–9]	0.13	100%	100%
Comorbidity (Charlson Index or Hopkins ACG)	Comorbidity prior to diagnosis	8 (7–9) [3–9]	0.49	79%	95%
Uncertain or rejected key predictor/explanatory variables for active surveillance for low-risk prostate cancer patients					
Family history of PCa	Prostate cancer family history of the newly diagnosis PCa	6 (5–8) [1, 9]	1.55	42%	53%
History of other cancer	Patient's history of other cancer	3 (2–6) [1–9]	2.25	21%	27%
Socioeconomic variables	Income/educational level, or geographic (e.g., rural vs. urban)	5 (3–6) [1, 9]	1.61	11%	32%
Nominated after first round, uncertain or rejected in second round					
Race/ethnicity	NA	6 (4–8) [3, 9]	1.61	32%	53%
PSA density	NA	6 (5–8) [1, 9]	1.55	68%	74%

Note: Several factors may affect the use of AS and are important to adjust for when looking at quality of care in men on AS. All nominated key predictors/explanatory covariates of AS care in low-risk prostate cancer rated on a 9-point Likert scales where 1=not important and 9=very important. AS: active surveillance; ACG: adjusted clinical groups; DI: disagreement index; IQR: inter quartile range; PCa: prostate cancer; PSA: prostate-specific antigen.