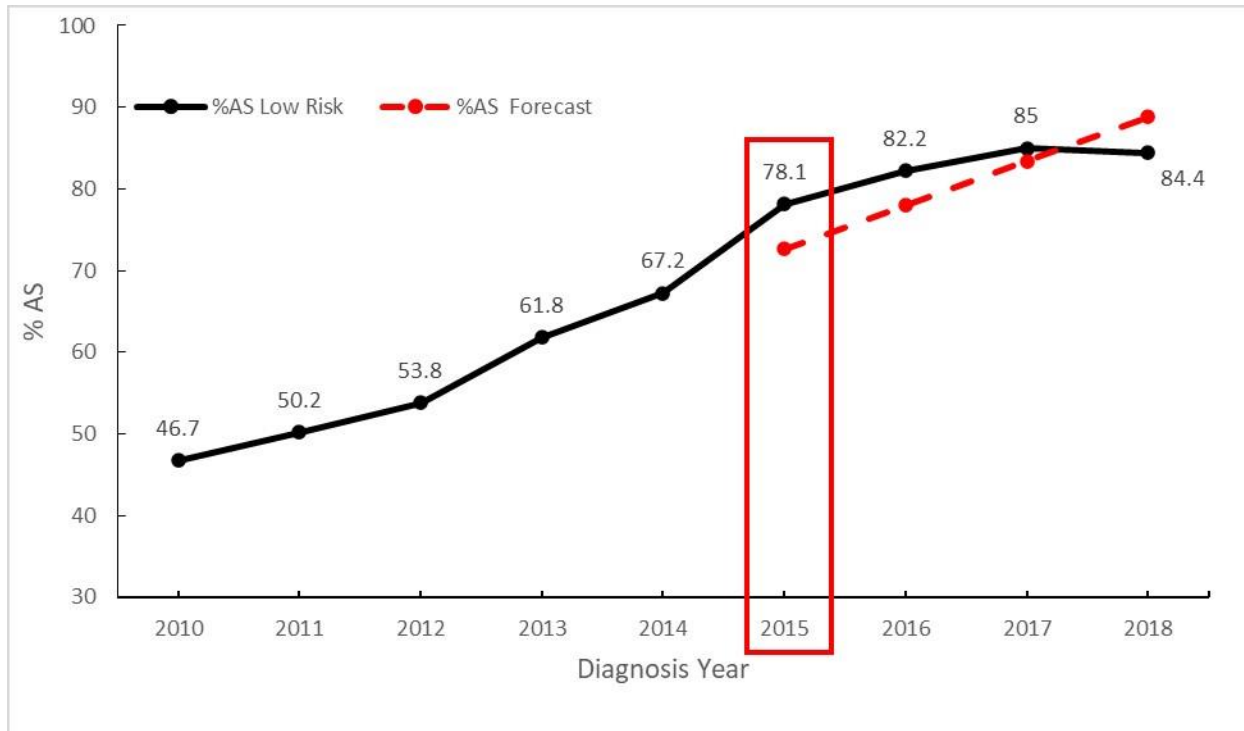


**APPENDIX**

**Supplementary Figure 1.** Percentage active surveillance (AS) by year for men with low-risk grade group 1 prostate cancer. Observed % AS results for main analyses (black line with data values) and associated forecasted % AS (red dashed line) predicted based on the linear trend prior to publication of the AS guidelines. Clinical guidelines for using AS to manage localized prostate cancer were published by Ontario Health (then Cancer Care Ontario) in 2015 (indicated by red rectangle on the figure).



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<b>Supplementary Table 1. Ontario Cancer Registry (OCR) and Ontario Health Insurance Plan (OHIP) physician claims used to identify prostate cancer patients and prostate cancer-related management</b>	
<b>Ontario Cancer Registry – patient identification</b>	
Prostate cancer	Topology code = C61
Histology - adenocarcinoma	Histology code = 8140
Total Gleason score from biopsy/TURP	CSSSF8 (2010 to 2017) = 06 or 07 CS Site-Specific Factor 8 Gleason's Score on Needle Core Biopsy/Transurethral Resection of Prostate (TURP)  GLEASON_SCORE_CLIN (2018) = 06 or 07
Gleason pattern from biopsy/TURP	CSSSF7 (2010 to 2017) CS Site-Specific Factor 7 Gleason's Primary Pattern and Secondary Pattern Values on Needle Core Biopsy/Transurethral Resection of Prostate (TURP) GLEASON_PAT_CLIN (2018)
PSA	CSSF1- PSA Value (2010 to 2018) PSA_VALUE (2018)
Clinical T stage	CSSF3 - CS extension (2010 to 2017) CSEXT (2018)

<b>Service provided</b>	<b>Fee code and definition</b>
Biopsy	Z712: biopsy, needle; Z713: biopsy, needle with drainage of abscess; S644: biopsy, perineal; E780: cystoscopy with needle biopsy of prostate;
Pelvic MRI	X461: MRI pelvis multi-slice sequence; X465: MRI pelvis repeat (another plane,

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	different pulse sequence - to a maximum of 3 repeats)
Androgen deprivation therapy	G342: implantation of hormone pellets
Orchiectomy	S589: orchiectomy; S598: radical orchiectomy
Transurethral resection of the prostate	S654: transurethral resection of prostate for residual tissue; S655:transurethral resection of prostate
Radical prostatectomy	S645:perineal prostatectomy; S646:perineal prostatectomy with vesiculectomy; S651: radical retropubic prostatectomy; S653:laparoscopic radical prostatectomy; (Note: dxcode 185)
Brachytherapy	S640: stereotactic prostate brachytherapy; X322: radium (sealed sources) treatment planning dosage; X323:radium (sealed sources) Intracavit. applic. - 1st applic.; X324: radium (sealed sources) - Interstitial; X325: radium (sealed sources) Applic. plaque/mould; X334: radium (sealed sources) Intracavit. applic. - rep. applic.
Radiotherapy	X310: simple treatment planning; X311: intermediate treatment planning; X312: complex treatment planning; X313: full 3D treatment preparation
PSA tests	L354 (Free PSA) L358 (Total PSA)

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<b>Supplementary Table 2. Definitions and distribution of treatment groups (and unclassifiable)</b>					
	<b>AS</b>	<b>Treatment</b>	<b>WW</b>	<b>Uncl-NoTxBx</b>	<b>Uncl_Tx</b>
Main analysis 2 <sup>nd</sup> Bx – biopsy or pelvic MRI	<ul style="list-style-type: none"> <li>• 2<sup>nd</sup> Bx within 2 y</li> <li>• No Tx prior to Bx</li> </ul>	<ul style="list-style-type: none"> <li>• Tx within 6 mos</li> <li>• No repeat Bx prior to Tx</li> </ul>	<ul style="list-style-type: none"> <li>• No 2<sup>nd</sup> Bx within 2 y</li> <li>• No Tx within 2 y</li> <li>• Age <math>\geq 75</math>*</li> </ul>	<ul style="list-style-type: none"> <li>• No 2<sup>nd</sup> Bx within 2 y</li> <li>• No Tx within 2 y</li> <li>• Age <math>&lt; 75</math></li> </ul>	<ul style="list-style-type: none"> <li>• Tx btwn 6–24 m</li> <li>• No repeat Bx prior to Tx</li> </ul>
n (%)	<b>7749 (46.8%)</b>	<b>3694 (22.3%)</b>	<b>793 (4.8%)</b>	<b>3188 (19.3%)</b>	<b>1120 (6.8%)</b>
Sensitivity 1 (change WW)	<ul style="list-style-type: none"> <li>• Same as main</li> </ul>	<ul style="list-style-type: none"> <li>• Same as main</li> </ul>	<ul style="list-style-type: none"> <li>• No 2<sup>nd</sup> Bx within 2 y</li> <li>• No Tx within 2 y</li> <li>• Age <math>\geq 75</math> OR Age 70 to 74 and ACG <math>&gt; 16</math>**</li> </ul>	<ul style="list-style-type: none"> <li>• No 2<sup>nd</sup> Bx within 2 y</li> <li>• No Tx within 2 y</li> <li>• Age <math>&lt; 75</math> (except if age 70 to 74 with ACG <math>&gt; 16</math>)</li> </ul>	<ul style="list-style-type: none"> <li>• Same as main</li> </ul>
n (%)	<b>7749 (46.8%)</b>	<b>3694 (22.3%)</b>	<b>1059 (6.4%)</b>	<b>2922 (18.0%)</b>	<b>1120 (6.8%)</b>
Sensitivity 2 (exclude MRI)	<ul style="list-style-type: none"> <li>• Same as main</li> </ul>	<ul style="list-style-type: none"> <li>• Same as main</li> </ul>	<ul style="list-style-type: none"> <li>• Same as main</li> </ul>	<ul style="list-style-type: none"> <li>• Same as main</li> </ul>	<ul style="list-style-type: none"> <li>• Same as main</li> </ul>
n (%)	<b>6820 (41.2)</b>	<b>3799 (23.0%)</b>	<b>827 (5.0%)</b>	<b>3807 (23.0%)</b>	<b>1291 (7.8%)</b>

\*Age  $\geq 75$  classified as WW because this group had a low frequency of having an RP (a marker of localized definitive therapy) at any time after diagnosis (1% of patients), life expectancy  $< 10$  y and screening programs often end around this age. \*\* Age 70–74 AND ACG  $> 16$  classified as WW because this group had a low frequency of RP at any time after diagnosis ( $< 2\%$  of patients).

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<b>Supplementary Table 3. PSA ACG score and age at diagnosis by compliance measures</b>			
	<b>Repeat biopsy within 1 year of diagnosis</b>		
	<b>Yes</b>	<b>No</b>	<b>p*</b>
n	3669	3310	
Median PSA (ng/ml)	6.30	6.10	0.0037
n	4062	3687	
Median ACG score	7.0	7.0	0.56
Age category (%)			
<55	60%	40%	<0.0001
55–64	53%	47%	
65–74	50%	50%	
≥75	49%	51%	
	<b>≥4 PSA measurements within 2 years</b>		
	<b>Yes</b>	<b>No</b>	<b>p</b>
n	3390	3589	
Median PSA (ng/ml)	6.30	6.10	0.0009
n	3796	3953	
Median ACG score	7.0	7.0	0.94
Age category (%)			
<55	50%	50%	0.70
55–64	48%	52%	
65–74	49%	51%	
≥75	50%	50%	
	<b>Average time between PSA measurements &lt;6 months</b>		
	<b>Yes</b>	<b>No</b>	<b>p</b>
n	4049	2000	
Median PSA (ng/ml)	6.30	6.10	0.04
n	4530	2238	
Median ACG Score	7.0	7.0	0.68

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Age category (%)			
<55	68%	32%	0.83
55–64	66%	34%	
65–74	67%	33%	
≥75	67%	33%	