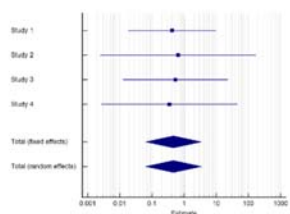


APPENDIX

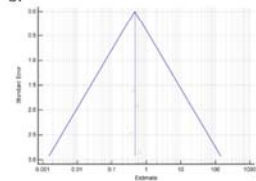
Supplementary Fig. 1. Subgroup meta-analysis of selected, crude, significant, predictors (effect estimates) of all-cause re-admission after radical prostatectomy (n=12 studies). All meta-analysis in this figure were conducted via the general inverse variance method using MedCalc (v.19.1.1). **(a, b)** Meta analytic output (forest and funnel plots throughout) showing that robot-assisted radical prostatectomy (RARP) has a non-significant positive effect (effect estimate 0.46 [0.06–3.47], p=0.454, n=4 studies) on re-admission, with low study heterogeneity ($I^2=0.00\%$, p=0.9981), and no publication bias (Egger's p=0.7063, Begg's p=0.4969). **(c, d)** Meta analytic output showing American Society of Anesthesiologists core (ASA) ≥ 3 has a non-significant negative effect (effect estimate 1.39 [0.74–2.61], p=0.305, n=2 studies) on re-admission, with low study heterogeneity ($I^2=0.00\%$, p=0.9081), but high publication bias (Egger's p<0.0001, Begg's p=0.3173). **(e, f)** Meta analytic output showing Charlson comorbidity index (CCI) ≥ 2 has a significant negative effect (effect estimate 1.86 [1.58–2.20], p<0.001, n=5 studies) on re-admission, with low study heterogeneity ($I^2=0.00\%$, p=0.9081), but high publication bias (Egger's p=0.0313, Begg's p=0.0500). **(g, h)** Meta analytic output showing SDH have a significant negative effect (effect estimate: 2.69 [2.57–2.80], p<0.001, n=4 studies) on re-admission, with low study heterogeneity ($I^2=42.42\%$, p=0.1570), but high publication bias (Egger's p=0.0063, Begg's p=1.0000). **(i, j)** Meta analytic output showing lymph node dissection (LND) has a significant negative effect (effect estimate 1.80 [1.17–2.76], p=0.008, n=2 studies) on re-admission, with low study heterogeneity ($I^2=0.00\%$, p=0.5802), but high publication bias (Egger's p<0.0001, Begg's p=0.4969). **(k, l)** Meta analytic output showing adverse markers of tumor pathology (such as AJCC T3, Gleason score >8, etc.) have a significant negative effect (effect estimate 4.10 [1.17–2.76], p<0.001, n=4 studies) on re-admission, but this result is attributed with high study heterogeneity ($I^2=97.3\%$, p<0.0001), and high publication bias (Egger's p=0.0167, Begg's p=1.0000). **(m)** Crude forest plot synthesizing other individually significant predictors of re-admission. Of note, high surgeon (>18/y) or hospital case volume (>46/y), through a minimally invasive approach, potentially has lowered odds of re-admission after radical prostatectomy for prostate cancer. Other factors that predict higher odds of re-admission include: age >70 years, length of stay >3 days, cardiopulmonary disease or mental disorder, and high operative time >251 minutes, and the presence of complications. In this meta-analysis of effect estimates, publication bias was high, and hence these predictors should also be interpreted individually in Supplementary Table 1, and within healthcare system contexts, when formulating quality improvement initiatives to reduce unplanned visits.

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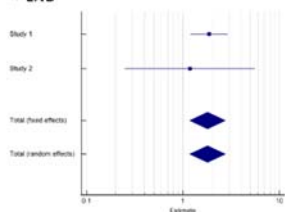
a. RARP



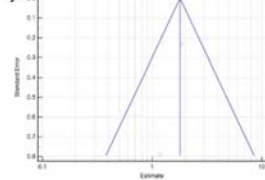
b.



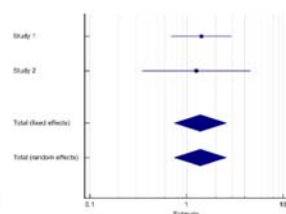
i. LND



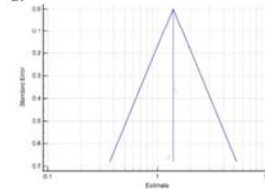
j.



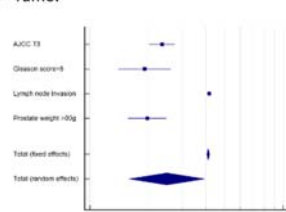
c. ASA≥3



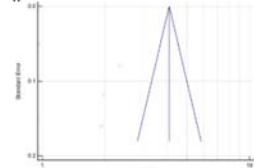
d.



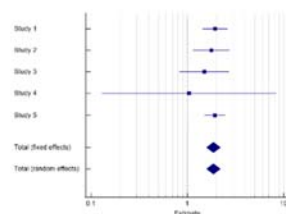
k. Tumor



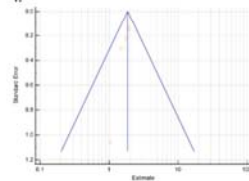
l.



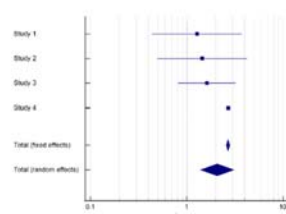
e. CCI≥2



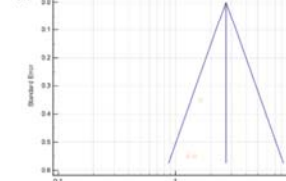
f.



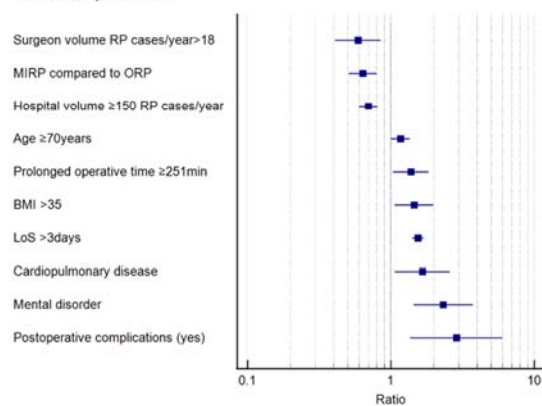
g. SDH



h.



m. Other predictors



Supplementary Table 1. Search strategies	
Database	Search string
EMBASE (OVID)	1. PATIENT RE-ADMISSION/ or re-admission.mp. 2. unplanned.mp. or Patient Re-admission/ 3. re-hospital.mp. 4. Patient Re-admission/ or re-hospitalization.mp. 5. unplanned visit.mp. 6. 1 or 2 or 3 or 4 or 5 7. Prostatectomy/ or prostate surgery.mp. or Prostate/ 8. Prostatectomy.mp. or PROSTATECTOMY/ 9. Prostatectomy/ or radical prostatectomy.mp. 10. radical retropubic prostatectomy.mp. 11. Prostatectomy/ or radical perineal prostatectomy.mp. 12. Prostatectomy/ or laparoscopic radical prostatectomy.mp. 13. Prostatectomy/ or open prostatectomy.mp. 14. Prostate/ or Prostatectomy/ or robotic-assisted laparoscopic radical prostatectomy.mp. 15. "Transurethral Resection of Prostate"/ 16. 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 17. 6 and 16 18. limit 17 to English language OR 1. PATIENT RE-ADMISSION/ or re-admission.mp. 2. unplanned.mp. or Patient Re-admission/ 3. re-hospital.mp. 4. Patient Re-admission/ or re-hospitalization.mp. 5. unplanned visit.mp. 6. Prostatectomy/ or prostate surgery.mp. or Prostate/ 7. Prostatectomy.mp. or PROSTATECTOMY/ 8. Prostatectomy/ or radical prostatectomy.mp. 9. radical retropubic prostatectomy.mp. 10. Prostatectomy/ or radical perineal prostatectomy.mp. 11. Prostatectomy/ or laparoscopic radical prostatectomy.mp. 12. Prostatectomy/ or open prostatectomy.mp. 13. Prostate/ or Prostatectomy/ or robotic-assisted laparoscopic radical prostatectomy.mp. 14. emergency.mp. or Emergencies/ 15. emergency room.mp. or Emergency Service, Hospital/

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	16. emergency visit.mp. or Emergency Medical Services/ or Emergency Service, Hospital/ 17. Emergency Service, Hospital/ or ER visit.mp. 18. Emergency Service, Hospital/ or emergency room visit.mp. 19. Emergency Service, Hospital/ or emergency department visit.mp. 20. benign prostatic hyperplasia.mp. or Prostatic Hyperplasia/ 21. holmium laser.mp. or Lasers, Solid-State/ 22. Prostatic Hyperplasia/ or Lasers, Solid-State/ or Laser Therapy/ or "Transurethral Resection of Prostate"/ or greenlight laser.mp. 23. 1 or 2 or 3 or 4 or 5 or 14 or 15 or 16 or 17 or 18 or 19 24. 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 25. 20 or 21 or 22 26. 23 and 24 27. 26 not 25 28. limit 27 to (english language and yr="2000 -Current")
PubMed (NCBI)	Search ((prostate OR prostate surgery OR prostatectomy OR radical prostatectomy OR radical retropubic prostatectomy OR radical perineal prostatectomy OR laparoscopic radical prostatectomy OR robotic- assisted laparoscopic radical prostatectomy OR robot-assisted laparoscopic radical prostatectomy OR open prostatectomy)) AND (((patient re-admission OR re-admission OR re-admission OR readmit OR re-admit OR unplanned OR re-hospital OR rehospital OR rehospitalization OR re-hospitalization OR unplanned visit OR rehospitalisation OR re-hospitalisation[all])) OR (((((emergency) OR emergency room) OR emergency room visit) OR emergency department) OR emergency department visit) OR ER visit)) AND (("2000/01/01"[PDat] : "2018/12/31"[PDat]) AND English[lang])
MEDLINE (NCBI)	1. PATIENT RE-ADMISSION/ or re-admission.mp. 2. unplanned.mp. or Patient Re-admission/ 3. re-hospital.mp. 4. Patient Re-admission/ or re-hospitalization.mp. 5. unplanned visit.mp. 6. 1 or 2 or 3 or 4 or 5 7. Prostatectomy/ or prostate surgery.mp. or Prostate/ 8. Prostatectomy.mp. or PROSTATECTOMY/ 9. Prostatectomy/ or radical prostatectomy.mp. 10. radical retropubic prostatectomy.mp. 11. Prostatectomy/ or radical perineal prostatectomy.mp. 12. Prostatectomy/ or laparoscopic radical prostatectomy.mp.

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	13. Prostatectomy/ or open prostatectomy.mp.
	14. Prostate/ or Prostatectomy/ or robotic-assisted laparoscopic radical prostatectomy.mp.
	15. "Transurethral Resection of Prostate"/
	16. 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15
	17. 6 and 16
	18. limit 17 to English language
	OR
	1. PATIENT RE-ADMISSION/ or re-admission.mp.
	2. unplanned.mp. or Patient Re-admission/
	3. re-hospital.mp.
	4. Patient Re-admission/ or re-hospitalization.mp.
	5. unplanned visit.mp.
	6. Prostatectomy/ or prostate surgery.mp. or Prostate/
	7. Prostatectomy.mp. or PROSTATECTOMY/
	8. Prostatectomy/ or radical prostatectomy.mp.
	9. radical retropubic prostatectomy.mp.
	10. Prostatectomy/ or radical perineal prostatectomy.mp.
	11. Prostatectomy/ or laparoscopic radical prostatectomy.mp.
	12. Prostatectomy/ or open prostatectomy.mp.
	13. Prostate/ or Prostatectomy/ or robotic-assisted laparoscopic radical prostatectomy.mp.
	14. emergency.mp. or Emergencies/
	15. emergency room.mp. or Emergency Service, Hospital/
	16. emergency visit.mp. or Emergency Medical Services/ or Emergency Service, Hospital/
	17. Emergency Service, Hospital/ or ER visit.mp.
	18. Emergency Service, Hospital/ or emergency room visit.mp.
	19. Emergency Service, Hospital/ or emergency department visit.mp.
	20. benign prostatic hyperplasia.mp. or Prostatic Hyperplasia/
	21. holmium laser.mp. or Lasers, Solid-State/
	22. Prostatic Hyperplasia/ or Lasers, Solid-State/ or Laser Therapy/ or "Transurethral Resection of Prostate"/ or greenlight laser.mp.
	23. 1 or 2 or 3 or 4 or 5 or 14 or 15 or 16 or 17 or 18 or 19
	24. 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13
	25. 20 or 21 or 22
	26. 23 and 24
	27. 26 not 25
	28. limit 27 to (english language and yr="2000 -Current")

Supplementary Table 2. Effect estimates significantly (p<0.05) associated with re-admissions following radical prostatectomy (n=12 studies)^{27,30,35,49,58,60,66,67,70,71,78,80}				
Predictors of re-admission	Effect estimate	Lower 95% CI	Upper 95% CI	Ref.
Age ≥70 years	1.17	1.00	1.36	Friðriksson 2014
AJCC T3	2.36	1.43	3.92	Wallerstedt 2015
ASA score ≥3	1.43	1.06	1.92	Schmid 2016a
ASA score 3–4	1.27	1.06	1.50	Xia 2018
Black race	1.62	1.30	2.02	Xia 2018
Blacks compared to non-hispanic whites	1.28	1.02	1.61	Schmid 2016b
BMI >35	1.45	1.06	1.98	Xia 2018
Cardiopulmonary disease	1.67	1.07	2.60	Schmid 2016a
Charlson comorbidity index, score ≥3	1.77	1.29	2.44	Chung 2012
Charlson comorbidity index, score ≥3	1.94	1.31	2.89	Friðriksson 2014
Charlson comorbidity index, score=2	1.50	1.08	2.09	Chung 2012
Charlson index, severe	1.04	0.90	1.20	Judge 2007
Comorbidity score >3	1.93	1.19	3.12	Schmid 2016b
Discharge destination not home/unknown	2.70	2.01	7.20	Schmid 2016a
Dyspnea	2.50	1.40	4.40	Pilecki 2014
Gleason score for pathologic specimen>8	1.92	1.31	2.83	Wallerstedt 2015
High D’Amico risk group	5.35	1.90	15.07	Moschini 2017
Hospital volume ≥150 RP cases/year	0.70	0.60	0.81	Friðriksson 2014
Hospital volume 46–49 RP cases/year	0.90	0.79	1.02	Judge 2007
IMD social deprivation, 5 (least)	0.79	0.71	0.89	Judge 2007
Intermediate D’Amico risk group	2.74	1.20	6.24	Moschini 2017
LoS >3 days	1.54	1.40	1.70	Sujenthiran 2017
Lymph node dissection	1.86	1.41	2.45	Wallerstedt 2015
Lymph node invasion (yes)	4.15	1.55	11.11	Moschini 2017
Mental disorder	2.32	1.44	3.73	Wallerstedt 2015
MIRP compared to ORP	0.64	0.51	0.80	Sujenthiran 2017
ORP compared to MIRP	1.53	1.12	2.08	Schmid 2016a
Patient age (higher)	1.14	–	–	Pilecki 2014
Pelvic lymph node dissection	1.18	1.00	1.38	Xia 2018
Postoperative complications (yes)	2.87	1.37	6.02	Moschini 2017

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Preop PSA >9.2 ng/ml	1.89	1.25	2.85	Xia 2018
Prolonged operative time ≥ 251 minutes	1.38	1.04	1.83	Schmid 2016a
Prostate weight >80 g	1.98	1.21	3.22	Wallerstedt 2015
RARP compared to LRP	0.42	0.20	0.84	Chung 2012
RARP compared to ORP	0.82	–	–	Pearce 2016
RARP compared to other	0.65	0.58	0.74	Sujenthiran 2017
RARP compared to RRP	0.35	0.18	0.68	Chung 2012
RARP compared to RRP	0.54	0.30	0.80	Pilecki 2014
Socioeconomic deprivation, 5 (most)	1.45	1.26	1.67	Sujenthiran 2017
Surgeon volume, RP cases/year >18	0.59	0.41	0.85	Chung 2012
Tumor risk category=high	1.78	1.57	2.03	Friðriksson 2014

BMI: body mass index; CI: confidence interval; LoS: length of stay; LRP: laparoscopic radical prostatectomy; MIRP: minimally invasive radical prostatectomy; ORP: open radical prostatectomy; PSA: prostate-specific antigen; RASRP: robot-assisted radical prostatectomy; RP: radical prostatectomy.