National Institute for Health and Care Excellence

Kidney cancer: diagnosis and management

[C] Evidence review for management of locally advanced renal cell carcinoma using nephrectomy or stereotactic ablative radiotherapy

NICE guideline NG256

Evidence underpinning recommendations 1.6.1,1.71 to 1.7.2 and a research recommendation in the NICE guideline

March 2026

Final

NICE National Institute for Health and Care Excellence®

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ISBN: 978-1-4731-9342-0

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1.1 Review question

What is the clinical and cost effectiveness of nephrectomy or stereotactic ablative radiotherapy (SABR) for treating locally advanced renal cell carcinoma in adults?

1.1.1 Introduction

There is variation in practice in the NHS for the management of renal cell carcinoma (RCC). Treatment options for locally advanced RCC include surgical techniques for nephrectomy or stereotactic ablative radiotherapy (SABR). Surgical techniques for nephrectomy include open, laparoscopic, or robotic-assisted surgery, which can be carried out either alone or with extensions to surgery (such as removal of local or regional lymph nodes, or the adrenal gland and inferior vena cava [IVC] thrombectomy).

Radical nephrectomy (also known as total nephrectomy) is surgery to remove an entire kidney, while partial nephrectomy removes the cancer but leaves as much of the kidney as possible. Nephrectomy can be performed with an open surgical approach or minimal-invasive surgical approach. The minimal-invasive approach is carried out laparoscopically or with the support of robotic instruments (robot-assisted laparoscopic surgery). As minimally invasive nephrectomy is less invasive compared to open nephrectomy, it may reduce the risk of postoperative adverse events. SABR is a non-surgical approach which is a highly focused radiation treatment that gives an intense dose of radiation concentrated on a tumour while limiting the dose to the surrounding organs.

This review aims to evaluate the clinical and cost effectiveness of SABR or different surgical techniques for nephrectomy to understand who may benefit from either procedure considering the trade-offs between benefits and harms in different circumstances.

1.1.2 Summary of the protocol

Table 1: PICOS inclusion criteria

Population	Adults (18 years or over) with a diagnosis of locally advanced renal cell carcinoma (RCC) confirmed according to the clinical or pathological Tumour size, Lymph Node, Metastasis (TNM) classification (usually stage 3 [T1-T2 N1 M0, T3 any N, M0]) and where the surgery is indicated or planned. Exclusion: • Adults with locally advanced inoperable or metastatic RCC • Adults with localised RCC

Interventions	Nephrectomy which can be carried out with extensions to surgery (such as removal of local and/or regional lymph nodes or the adrenal gland and inferior vena cava (IVC) thrombectomy)
Comparator	• Stereotactic ablative radiotherapy (SABR) **or** • Different surgical techniques for nephrectomy, including open, laparoscopic, or robotic-assisted surgery compared to each other.

Outcomes	• Disease-free survival, including cancer-free survival or if not reported:
	  ○ Local recurrence
	  ○ Distant metastases
	• Overall survival or if not reported:
	  ○ Mortality
	• Cancer-specific survival
	• Severe adverse events and complications reported as:
	  ○ Grades 3 or 4 classified by Common Terminology Criteria for Adverse Events (CTCAE) for comparison of SABR vs. surgery
	  ○ observed in the intraoperative period (measured according to Intraoperative Adverse Incident Classification – EAUiaiC) and postoperative period (according to Clavien-Dindo Classification of Surgical Classifications at 30-days and 90-day period after surgery) for comparison of different surgery techniques
	• Long-term severe adverse events
	  ○ Renal function impairment
	  ○ Cardiovascular events
	• Duration of hospital stay
	• Number of hospital re-admissions
	• Quality of life

Study type	• Randomised controlled trials (RCTs) • Any controlled, non-randomised studies • Cohort studies (prospective and retrospective observational studies) • Systematic reviews of the above studies

For the full protocol see appendix A.

1.1.3 Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual. Methods specific to this review question are described in the review protocol in Appendix A and the methods document.

Declarations of interest were recorded according to NICE's conflicts of interest policy.

Methods and technical decisions specific to this review are summarised below:

1. No systematic review (SR) met the inclusion criteria to be included as a data source, however, the SR developed by Wang et al. (2023) has included an individual

observational study (Laird et al. 2015) that met our criteria and was included in the evidence synthesis.

2. The population for this review is people with locally advanced RCC confirmed according to the clinical or pathological TNM classification (usually stage 3 [T1-T2 N1 M0, T3 any N M0]). Some studies had broader eligibility criteria that included participants with stage 1 or stage 2 (T1-T2). In this scenario, studies were excluded where <90% of the sample had RCC with clinical or TNM pathological stage T3.

3. Included studies used different definitions for each outcome. Therefore, the way the study described an outcome was compared to the outcomes agreed by the committee in the protocol to determine what each study was reporting. For consistency, outcomes were renamed in the analysis to match the protocol outcomes. The following approaches were used:

    a. Disease-free survival: time to event outcomes of disease-free survival, cancer-free survival, recurrence-free survival and relapse-free survival were combined in the analysis.

    b. Recurrence: event data reported as recurrence, local recurrence, and distant metastases. These three outcomes were analysed separately. Recurrence was interpreted as any recurrence, with local recurrence and distant metastases as subsets of these.

    c. Overall survival: time to event outcomes reported in studies as survival, mortality and all-cause mortality were combined in the analysis.

    d. Some studies reported cancer-specific mortality instead of cancer-specific survival or all-cause mortality instead of overall survival. These were extracted as proxy outcomes where the preferred outcome was not available.

4. Mortality at timepoints of 90 days or less was not included in this review. This was considered to be within the postoperative period and therefore covered by the outcome of postoperative severe adverse events (PSAE). PSAE was required to be reported as Grade 3 or 4 by the Common Terminology Criteria for Adverse Events (CTCAE) for SABR versus surgery. For different surgical techniques, PSAEs had to be reported using the Clavien-Dindo classification to be included.

5. The search was limited to OECD countries only, because studies from these countries were considered to be more directly applicable to the UK healthcare setting.

6. Outcomes may be influenced by different confounding factors. Therefore, as part of the risk of bias judgment we assessed whether the analyses in the included studies were adjusted for surgical techniques carried out, age, TNM classification, primary RCC type (e.g. clear cell, papillary, chromophobe), renal function at baseline, and performance status of the person at baseline (e.g. ECOG and Karnofsky).

7. Unadjusted or partially adjusted outcomes for the confounders chosen by the committee were assessed as having a serious risk of bias, and fully adjusted outcomes were assessed as having a moderate risk of bias. We considered it

impossible to completely remove the effect of confounding in these studies, and fully adjusted results were assessed as moderate because there is likely still residual confounding from other potential factors.

1.1.3.1 Search methods

The searches for the effectiveness evidence were run on 18/01/2024 and re-run on 14/02/2025. The following databases were searched: Central Register of Controlled Trials (Wiley), Cochrane Database of Systematic Reviews (Wiley), Embase (Ovid), Epistemonikos (Epistemonikos) and MEDLINE ALL (Ovid). Limits were applied to remove animal studies, conference abstracts, editorials, letters, news items and commentaries, as well as papers not published in the English language. Filters were used to limit to OECD countries, systematic reviews, randomised controlled trials and observational studies.

The searches for the cost effectiveness evidence were run on 05/01/2024 and 07/01/2024 and re-run on 06/05/2025. The following databases were searched: EconLit (Ovid), Embase (Ovid), HTA (CRD), International HTA database (INAHTA), MEDLINE ALL (Ovid) and NHS Economic Evaluations Database (CRD). Limits were applied to remove animal studies, conference abstracts, editorials, letters, news items and commentaries, as well as papers not published in the English language. Filters were used to limit to OECD countries and cost utility studies.

A NICE senior information specialist (SIS) conducted the searches. The MEDLINE strategy was quality assured by another NICE SIS. All translated search strategies were peer reviewed to ensure their accuracy. Both procedures were adapted from the 2015 PRESS Guideline Statement. Further details and full search strategies for each database are provided in appendix B.

1.1.3.2 Protocol deviations

Only one study reported length of stay as a mean number of days. Three studies reported this outcome as a median, but this data was not extracted initially as this measure cannot be included in a meta-analysis. Due to the lack of evidence and the suggestion that this outcome may be skewed and so unsuitable to be reported as a mean, the committee asked to review the median length of stay. Where this data was available in the included studies, it was extracted and included in the evidence tables and summarised in Table 5.

1.1.4 Effectiveness evidence

1.1.4.1 Included studies

A single systematic search was carried out to identify potentially relevant studies for the current review (review C) and reviews A, B, H1 and H2 combined (review A: partial or radical nephrectomy for localised RCC, review B: non-surgical interventions for localised RCC, reviews H1 and H2: non-pharmacological management of advanced RCC). The search found 19,882 references (see appendix B for the literature search strategy).

The 19,882 references were screened at title and abstract level against the review protocols, with 19,209 excluded at this level. 674 studies were taken forward for full text assessment for any of the four review questions listed above. Of these, 194 were relevant to this review. 10% of references were screened separately by two reviewers as described in the protocol, with 99% agreement. The remaining studies were not dual screened. Discrepancies were resolved by discussion.

The full texts of 194 (6 RCT, 38 SRs, and 150 cohort studies) were ordered for closer inspection. A total of 7 cohort studies met the criteria specified in the protocol for this review (review C) (appendix A). All of the identified studies assessed different surgery techniques. No studies were identified for SABR versus surgery. For a summary of the 7 included studies see Table 2.

The clinical evidence study selection is presented as a PRISMA diagram in appendix C.

See section 1.1.14 References – included studies for the full references of the included studies.

1.1.4.2 Excluded studies

Details of studies excluded at full text, along with reasons for exclusion are given in appendix J.

1.1.5 Summary of studies included in the effectiveness evidence

Table 2 Summary of characteristics of the included non-randomised studies

Study details	Population	Intervention	Comparator	Confounders the study adjusted for	Outcomes	Risk of bias
Bensalah (2009) Italy Study dates: 1984-2004 Median follow-up: 28 months and 55 months for laparoscopic radical nephrectomy and open radical nephrectomy, respectively Retrospective cohort study	N=179 Patients with pT3b with tumoral thrombus invading the renal vein but not the vena cava and patients with pT3a tumours with perirenal fat invasion Key exclusion criteria: Not reported	Laparoscopic radical nephrectomy (n=44)	Open radical nephrectomy (n=135)	Propensity score matching using age, gender, tumour size, Fuhrman grade, perirenal fat invasion, renal vein invasion and histological subtype	Overall survival	Serious
Bragayrac (2016) US Study dates: 1998-2015 Median follow-up: 32.8 months	N=172 Patients with pT3 and pT4 RCC (proportion of	Minimally invasive radical nephrectomy (robotic-assisted or laparoscopic) (n=67)	Open radical nephrectomy (n=105)	Unadjusted analysis	Overall survival Length of hospital stay Complications - postoperative Local recurrence	Serious

Study details	Population	Intervention	Comparator	Confounders the study adjusted for	Outcomes	Risk of bias
Retrospective cohort study	patients with stage pT4 was <10%) Key exclusion criteria: Patients who underwent partial nephrectomy and nephroureterectomy				Distant metastasis	
Gershman (2017) US Study dates: 1980-2010 Median follow-up: 8.5 years (IQR 5.6– 10.9) Retrospective cohort study	N=138 Patients with pN1M0 RCC Key exclusion criteria: Not reported	Laparoscopic radical nephrectomy (n=5)	Open radical nephrectomy (n=133)	Unadjusted analysis	Overall survival Distant metastasis Cancer-specific mortality	Serious
Laird (2015) UK Study dates: 2000-2011	N=50 Patients with pT3 tumours	Laparoscopic radical nephrectomy (n=25)	Open radical nephrectomy (n=25)	Propensity score matching using age, gender, histological subgroup, maximal diameter of tumour, TNM stage, Fuhrman grade	Complications - postoperative	Serious

Study details	Population	Intervention	Comparator	Confounders the study adjusted for	Outcomes	Risk of bias
Median follow-up: 4.6 years for the laparoscopic radical nephrectomy group and 4.8 years for the open radical nephrectomy Prospective cohort study	Key exclusion criteria: Patients undergoing either partial nephrectomy, laparoscopic-assisted open nephrectomy or nephrectomy with inferior vena cava exploration					
Patel (2017) Canada Study dates: 2008-2015 Median follow-up: 21.1 months Retrospective cohort study	N=452 Patients with pT3a RCC Key exclusion criteria: Patients with metastatic disease at the time of surgery	Laparoscopic renal surgery, including both laparoscopic radical and partial nephrectomy (n=226)	Open renal surgery, including both open radical and partial nephrectomy (n=226)	Propensity score matching using age, gender, year of surgery, tumour size, clinical T stage, grade, histology, and partial vs radical nephrectomy	Recurrence	Serious
Rose (2020) US Study dates:1998-2018	N=52 Patients with renal cell carcinoma and	Robot-assisted radical nephrectomy with tumour thrombus (n=24)	Open radical nephrectomy with tumour thrombus (n=28)	Unadjusted analysis	Complications - postoperative	Serious

Study details	Population	Intervention	Comparator	Confounders the study adjusted for	Outcomes	Risk of bias
Median follow-up: 79 months and 24 months for open radical nephrectomy and robot-assisted radical nephrectomy, respectively Retrospective cohort study	inferior vena cava tumour thrombus Key exclusion criteria: Patients with venous tumour thrombus level 0, 3, and 4					
Vuong (2021) France Study dates: 2015-2020 Median follow-up (IRQ): of 13 months (4.3-24.5) and 8 months (3.8-14.5) in the open and robotic group, respectively Retrospective cohort study	N=40 Patients with renal cancer with level 1-2 tumour thrombus involving the inferior vena cava Key exclusion criteria: Not reported	Robot-assisted radical nephrectomy (n=10)	Open radical nephrectomy (n=30)	Unadjusted analysis	Complications - postoperative All-cause mortality	Serious

IQR: Interquartile range

See Appendix D for full evidence tables.

1.1.6 Summary of the effectiveness evidence

In the absence of published minimally important differences (MIDs), clinical decision thresholds were agreed with the committee and used to interpret the evidence. The line of no effect (in this case represented by 1.0) was used as a clinical decision threshold for the outcomes of overall survival and mortality, cancer-specific mortality, disease-free survival and recurrence, including local and distant metastasis, post-operative severe adverse events, and duration of hospital stay as detailed in the protocol. No data was identified for quality of life.

The following criteria were used to interpret the effect (column of 'Interpretation of effect' below) in the summary GRADE tables. Evidence statements are divided into 2 groups as follows:

- We state that the evidence showed that there is an effect if the 95% CI does not cross the line of no effect.
- It is not possible from the evidence to differentiate between comparators if the 95% CI crosses the line of no effect.

See Table 3, Table 4 and

Table 5 for the summary findings of this review.

See Appendix F for the full GRADE assessment.

Table 3 Minimally invasive radical nephrectomy vs Open radical nephrectomy

Number of studies	Outcome	Sample size	Effect estimate	Certainty	Interpretation of effect
3 (Bensalah 2009, Gershman 2017, Bragayrac 2016)	Overall survival ≤8.5 years	489	HR 1.05 (0.60 to 1.84)	Very low	Could not differentiate
1 (Gershman 2017)	Cancer-specific mortality ≤8.5 years	138	HR 0.99 (0.31 to 3.15)	Very low	Could not differentiate
1 (Vuong 2021)	All-cause mortality – Radical nephrectomy in combination with inferior vena cava thrombectomy <2 years	40	RR 0.75 (0.26 to 2.13)	Very low	Could not differentiate

1 (Patel 2017)	Recurrence <2 years	398	RR 0.83 (0.64 to 1.07)	Very low	Could not differentiate
1 (Bragayrac 2016)	Local recurrence <3 years	172	HR 0.66 (0.03 to 14.25)	Very low	Could not differentiate
2 (Gershman 2017, Bragayrac 2016)	Distant recurrence ≤8.5 years	310	HR 0.78 (0.29 to 2.11)	Very low	Could not differentiate
1 (Bragayrac 2016)	Length of stay (days)	172	MD -2.12 (-5.97 to 1.73)	Very low	Could not differentiate
1 (Rose 2020)	Complications - CD I/II - Radical nephrectomy in combination with IVCT	52	RR 0.39 (0.12 to 1.28)	Very low	Could not differentiate
2 (Rose 2020, Vuong 2021)	Complications - CD III/IV/V - Radical nephrectomy in combination with IVCT	92	RR 0.67 (0.26 to 1.75)	Very low	Could not differentiate
2 (Laird 2015, Bragayrac 2016)	Complications – CD I/II – Radical nephrectomy alone	222	RR 0.59 (0.35 to 0.97)	Low	Effect favours minimally invasive radical nephrectomy
2 (Laird 2015, Bragayrac 2016)	Complications - CD III/IV/V - Radical nephrectomy alone	222	RR 0.71 (0.29 to 1.71)	Very low	Could not differentiate

CD: Clavien-Dindo, IVCT: Inferior vena cava thrombectomy, HR: Hazard ratio, RR: Risk ratio, MD: Mean difference.

See appendix F for reasons for downgrading the evidence.

Table 4 Laparoscopic partial nephrectomy vs Open partial nephrectomy

Number of studies	Outcome	Sample size	Effect estimate	Certainty	Interpretation of effect
1 (Patel 2017)	Recurrence <2 years	54	RR 1.79 (0.48 to 6.77)	Very low	Could not differentiate

RR: Risk ratio

See appendix F for reasons for downgrading the evidence.

Table 5 Length of stay: median results

Study	Minimally invasive radical nephrectomy		Open radical nephrectomy		
	Median (days)	IQR	Median (days)	IQR	P value
Laird (2015)	4	4-7	9	7-10	<0.001
Rose (2019)[a]	3	1.3-4	7	5-9	0.03
Vuong (2021)[a]	7	6-7	10	8-14.8	0.22

a. People with RCC and inferior vena cava thrombus

1.1.7 Economic evidence

A single literature search was conducted to identify published economic evaluations of relevance to the review questions on the management of RCC in this guideline (see appendix B), which includes the present review C for the management of locally advanced RCC, as well as reviews for the management of localised RCC (evidence reviews A and B), and the management of advanced RCC (evidence reviews H1 and H2).

This search retrieved 326 studies, and based on title and abstract screening four studies were identified as potentially relevant for any of the evidence reviews covered by the search. On review of the full text, two studies were included for evidence review B, and two studies were excluded. For details on study selection, see economic study selection flow chart in appendix G.

1.1.7.1 Included studies

No economic evidence was identified for the present review C on the management of locally advanced RCC with nephrectomy or SABR. Two economic studies were included for evidence review B on non-surgical interventions or active surveillance in adults with localised RCC (see evidence review B for details).

1.1.7.2 Excluded studies

Two studies were excluded at full text review (see appendix J for a list of studies and reason for exclusion).

1.1.8 Summary of included economic evidence

No economic evidence was identified for this review question.

1.1.9 Economic model

No original economic modelling was conducted for this review question. However, a costing analysis was conducted to aid in recommendation making for this review question and give context of how costly each treatment option is, weighed against the outcomes in the clinical review and their potential downstream costs across the management pathway.

Full details of the analysis are included in the accompanying costing report. A summary of the procedure costs is in Table 6 and the downstream costs are presented in Table 7.

Cost of the procedures

The costs of minimally invasive and open nephrectomy were estimated from NHS Cost Collection. A minimally invasive nephrectomy can be undertaken as a robot-assisted procedure; however, there is not a specific HRG code for robotic surgery, and so the additional cost of this procedure relative to laparoscopic nephrectomy was estimated from Camp et al. (2018). A weighted average cost was estimated using the relative proportion

receiving each of the three surgical approaches as reported in the National Kidney Cancer Audit (2024) and the corresponding episode cost from NHS Cost Collection. The cost of an appointment with a consultant following surgery is also included in these costs.

To estimate the costs for SABR, the committee advised that people would receive between 1 and 3 fractions of radiation treatment, based on the person's characteristics, and would require the cost of CT preparation prior to treatment. Following the procedure, patients receive a CT scan with contrast of three areas, and either an appointment with surgical consultant or a cancer MDT meeting. A range of costs has been calculated, based on whether they receive 1 or 3 fractions, or a consultant or cancer MDT post-surgical appointment. Unit costs for all procedures are provided in Table 8.

Table 6: Summary of procedure costs

Surgery procedure	Type of procedure	Total cost of the procedure
Radical nephrectomy	Open: 20%; Laparoscopic: 48%; Robotic: 31%	Open: £10,142 Laparoscopic: £9,970 Robotic: £10,172
SABR	Lowest estimate:1 fraction of radiation, post-surgical appointment with cancer MDT Highest estimate: 3 fractions of radiation, post-surgical appointment with surgical consultant	£2,133 £2,684

Cost of downstream events

Monitoring of patients after treatment comprises imaging, namely CT scans, at regular intervals. Complete blood counts are taken prior to imaging. Follow-up schedules over 5 years for the costing analysis are based on the GIRFT guidance and committee opinion, with costs of scans taken from NHS Cost Collection. Costs were estimated for each risk category, with their risk score based on their RCC subtype (e.g. Leibovich score for clear cell RCC). People previously receiving SABR are assumed to be followed up as if they are intermediate risk.

The cost of a year of adjuvant pembrolizumab treatment was also included for people at increased risk of recurrence who were previously treated via nephrectomy, which the committee suggested would be 30% of people who have had surgery. Pembrolizumab does have a confidential access price which has not been included here, and so this cost after surgery is an overestimate. People treated with SABR are not eligible for adjuvant therapy with pembrolizumab, as per the NHS commissioning guidelines.

Downstream costs associated with the management of recurrences are estimated using the distribution of treatments for stages III and IV RCC, as reported by Rossi et al. (2021) for

local and distant recurrences, respectively. The committee suggested that 85% of distant recurrences would be treated with systemic therapies, with costs of the systemic therapy pathway extracted from the recent NICE appraisal TA962.

Table 7: Estimated cost of downstream events

Downstream resource	Costing approach	Total cost
Adjuvant treatment	Assume 30% receive adjuvant pembrolizumab. Cost per vial: £2,630.Cost per administration: £398. Dose given every 3 weeks.	Total 1-year cost: £29,522
Follow up	CT scan with contrast of three areas. Low risk: 3 total scans, intermediate risk: 6 total scans, high risk: 8 total scans.	Total 5-year cost: Low risk: £378 Intermediate risk: £757 High risk: £1,009
Recurrence	Local recurrence: 51% managed by open nephrectomy, 49% by laparoscopic nephrectomy Distant recurrence: 85% systemic therapy, 37% cytoreductive nephrectomy, 12% radiotherapy, 17% metastasectomy.	Cost per local recurrence (5-year cost): £14,649 Cost per distant recurrence (1-year cost): £77,342 Note that these costs apply only to those who experience recurrence, see Section 1.1.6 for relative effectiveness evidence.

1.1.10 Unit costs

Unit costs of interventions are listed in Table 8.

Table 8: Unit costs of interventions

Resource	Unit cost	Source
Open nephrectomy	£10,142.10	NHS Cost Collection (2024). Weighted average of codes LB61C-G, Major, Open or Percutaneous, Kidney or Ureter Procedures, 19 years and over
Laparoscopic nephrectomy	£9,970.10	NHS Cost Collection (2024). Weighted average of codes LB62C-D, Major Laparoscopic, Kidney or Ureter Procedures, 19 years and over
Robot-assisted nephrectomy	£10,172.87	Ratio of robotic to laparoscopic partial nephrectomy costs estimated from Camp et al. (2018), calculated as £4,444 / £4,356 = 1.02. Ratio applied to the laparoscopic nephrectomy unit cost to estimate the robotic nephrectomy unit cost
CT preparation for SABR therapy	£1,691	NHS Cost Collection (2024). SC41Z preparation for intensity modulated radiation therapy with technical support
One fraction of SABR	£237	NHS Cost Collection (2024). SC22Z deliver a fraction of treatment on a megavoltage machine

SABR: stereotactic ablative radiotherapy, CT: computed tomography

1.1.11 The committee's discussion and interpretation of the evidence

1.1.11.1. The outcomes that matter most

The committee discussed the outcomes specified in the protocol. They agreed when considering different surgical techniques, the most important outcomes for decision-making were complications and length of hospital stay. Although survival and recurrence (local or distant) are important, the committee did not expect to see a difference in these outcomes when comparing different surgical techniques.

The committee agreed that hospital admissions and duration of hospital stay are important outcomes both for individuals and as an indicator of the impact of treatment on resources. Length of stay may also inform people's quality of life and health status in the short and long term, playing an important role in deciding which treatment option is best for individuals.

1.1.11.2 The certainty in the evidence

Overall, the evidence for most outcomes was assessed as very low certainty, apart from Clavien-Dindo level I/II complications for minimally invasive radical nephrectomy (MIRN) versus open radical nephrectomy, which was rated as low certainty. The reasons for downgrading the certainty of the evidence were mainly related to:

- risk of bias (all of the evidence for this review comes from non-randomised studies and all studies were assessed as being at serious risk of bias because they did not control for all important confounding factors and some studies did not describe how the multivariate analysis was performed)
- inconsistency (some outcomes were reported by only one study and where meta-analysis was possible, we observed high unexplained heterogeneity (I^2 above 40%) in some analyses) and
- imprecision (the 95% confidence interval of most outcomes assessed crossed the line of no effect and most studies were very small and may not have had enough participants to be able to detect a difference in effect between interventions).

No planned subgroup analysis could be performed because most outcomes included only one study, and the studies did not report results for the subgroups of interest in the protocol.

Importantly, the committee observed that the data used by the studies for their analyses was collected at a time when minimally invasive surgery was being established so more people may have had open surgery as a per current practice at that time. They noted that the included studies used datasets ranging from 1980 to 2020 and practice changed substantially during this time. However, the majority of the evidence came from studies using data from the mid-1990s onwards, when minimally invasive techniques were becoming more commonly used so they agreed that the presented evidence was applicable to current practice.

The committee noted that there was limited evidence for the outcomes that were reported. In addition, there was a lack of evidence about the number of hospital admissions, long-term adverse events such as renal function impairment and cardiovascular events, and quality of life using the questionnaires specified in the review protocol. Furthermore, no evidence was identified for SABR compared to surgery.

1.1.11.3 Benefits and harms

Different surgical techniques

It was not possible from the evidence for most of the outcomes (overall survival, cancer-specific mortality, all-cause mortality, local and distant recurrence, and length of stay) to differentiate between minimally invasive radical nephrectomy (MIRN) and open radical nephrectomy (ORN, also called open total nephrectomy). The committee agreed that, although this is not proof of equivalence, based on their experience and expertise they expected to see little difference between these surgical techniques for oncological outcomes.

The committee noted that the 95% confidence interval for local recurrence < 3 years was very wide (HR 0.66, 95% CI 0.03 to 14.25), reflecting a large amount of uncertainty around this result. The committee therefore decided that they could not draw any conclusions regarding this outcome from the available data.

Although it was not possible from the evidence to differentiate between the two surgical techniques for mean length of hospital stay, the committee reported that in their experience, the length of stay in hospital has been reduced since the introduction of MIRN. However, the routine length of stay in hospital following MIRN or ORN may vary across countries. In particular, the committee noted that reimbursement rules in some countries may incentivise longer hospital stays, and this could impact the results reported.

Since there were very limited data on mean length of stay, the committee decided to deviate from the protocol to look at median length of stay as well. One study (Laird et al. 2015) reported a median of 4 days (IQR 4-7 days) for MIRN compared to 9 days (IQR 7-10) for ORN (p value <0.001). These data support the committee's experience of the effect of MIRN on the length of stay in hospital. Two studies (Rose et al. 2019 and Vuong et al. 2021) reported median length of stay for MIRN compared to ORN in people with RCC and inferior vena cava thrombosis. However, whilst median length of stay was lower in the MIRN groups, the difference was only statistically significant for Rose et al. (2019).

No evidence was identified for quality of life; however, the committee highlighted the importance of this outcome for people with locally advanced RCC. They agreed that in the absence of information on the impacts of the treatments on quality of life, outcomes such as length of stay and complications are important for decision-making as they can directly lead to negative effects on quality of life that should not be underestimated.

The committee discussed the evidence on partial nephrectomy and noted that partial nephrectomy is not used routinely in current practice for locally advanced lesions. The committee thought the evidence for partial nephrectomy for people with locally advanced lesions probably came from people who were thought to be stage T1 and T2 on imaging but later found to be T3 on surgical pathology. For this reason, no recommendation was made for partial nephrectomy in this population. The committee agreed that it was important to make it clear that total nephrectomy is the preferred type of nephrectomy for people with locally advanced renal lesions and they made a strong recommendation to reflect this.

The committee also expected to see a clinically meaningful difference in the risk of having complications between the types of surgery as one of the purposes of minimally invasive

techniques is to minimise complications. In addition, it is expected to lead to better post-surgery recovery and faster return to daily activities and work compared to those patients who undergo ORN, since the surgical procedure is less invasive. The evidence did not reflect this consistently. It was not possible from the evidence to differentiate between MIRN compared to ORN in combination with inferior vena cava thrombectomy (IVCT) or alone for Clavien-Dindo grade III/IV/V complications. For Clavien-Dindo grade I/II complications, it was also not possible from the evidence to differentiate between MIRN compared to ORN (both in combination with IVCT), but the risk of these complications was reduced with MIRN compared to ORN (both without IVCT). The committee noted that the results for the patients with IVCT came from 2 studies with small numbers of patients in each arm and relatively small number of events, which may have made it hard to detect any underlying differences between the treatments. For the MIRN versus ORN (both without IVCT) comparison there were very few Clavien-Dindo grade III/IV/V events, although the pooled samples sizes were larger than the MIRN versus ORN (both with IVCT analysis). The committee also had some concerns regarding the reporting of Clavien-Dindo grade I/II complications. They thought that there may be inconsistent reporting for low-grade events (such as urinary tract infections and wound healing problems), particularly as the evidence came from retrospective studies. Taking these points into account, the committee recommended that minimally invasive procedures for total nephrectomy are considered for people with locally advanced RCC where they are suitable based on lesion and patient characteristics.

For people with locally advanced renal lesions the committee noted that the decision about the type of surgery should be informed by comprehensive imaging for diagnosis and staging and discussion with a multidisciplinary team (e.g. cardiothoracic surgeons, vascular and hepatobiliary surgeons). They agreed that it is very important that people with locally advanced RCC have surgery in a timely manner to reduce the risk of progression to metastatic disease. They also agreed that although it was rare for a need for dialysis to be expected after interventions for locally advanced RCC, liaising with local renal services if this was the case would be important to enable renal services to initiate vascular access planning and pre-dialysis counselling. They included this in a recommendation based on their expertise and experience.

Examples of diagnostic imaging for those with venous tumour thrombi might include magnetic resonance imaging to establish a diagnosis of thrombus and demonstrate the level of the thrombus to guide need for assistance from other surgical specialities (i.e. hepatobiliary or cardiothoracic surgery). The committee agreed that whilst minimally invasive surgery could still be used for people with locally advanced RCC and inferior vena cava (IVC) thrombus, as the severity/complexity increases it would most likely require open techniques to perform the surgery. Based on their clinical expertise and experience, the committee recognised that there are other situations where minimally invasive techniques are not suitable for total nephrectomy. These include, but are not limited to, when the tumour size limits access in the pneumoperitoneum or the tumour is at risk of intraoperative rupture or when adequate control of IVC required for tumour resection cannot be achieved by minimally invasive procedures. In these circumstances they agreed that open total nephrectomy should be used instead of MIRN and added these points to the recommendation drafted above to cover situations where open total nephrectomy is the preferred option. The committee agreed that it is important that people with these complex locally advanced RCCs have their cases discussed in a uro-oncology multidisciplinary team with relevant expertise in managing

kidney cancer and extensive retroperitoneal surgery to ensure that they have access to the expertise needed.

Based on the limitations of the evidence base for MIRN and the limited number of studies available, the committee drafted a research recommendation for a prospective study that would examine the clinical effectiveness, cost-effectiveness and effects on quality of life of different types of MIRN techniques compared to each other. They hoped that further studies could provide evidence to support recommendations for specific types of MIRN, as opposed to the current class level recommendations.

SABR for locally advanced renal cell carcinoma

Although no evidence was identified for SABR, the committee decided not to make a research recommendation because they were aware that an updated NHSE commissioning policy for SABR is being developed and locally advanced RCC is not a current research priority for the use of SABR.

1.1.11.4 Cost effectiveness and resource use

No economic evidence was identified to address the question of cost-effectiveness of nephrectomy or SABR for the management of locally advanced RCC. Given this lack of formal economic evidence, the committee were presented with costs of the relevant interventions and management of their associated downstream events, and used their expertise to discuss the expected impact on resource use when making their recommendations.

The costing analysis demonstrated that the costs were very similar for the different procedures for nephrectomy, although open nephrectomies are slightly more costly than minimally invasive nephrectomies, and this may be due to limitations in how costs are reported (i.e. the cost of open and laparoscopic nephrectomies will include a proportion of procedures that are partial nephrectomies, which are likely to have a different cost to radical nephrectomies due to their higher length of stay and complication rate).

The committee noted that there were challenges with assigning costs to robotic surgery procedures, and that they would expect a larger difference in total episode cost between robot-assisted nephrectomy and other surgical approaches given the number of staff required and cost of consumables (e.g. acquiring and maintaining the robot). Currently, nephrectomies are usually implemented robotically, which is supported by data collected in the latest National Kidney Cancer Audit (NKCA) report showing that in England, robotic procedures accounted for 87% of partial nephrectomies and 31% of radical nephrectomies. A recently published NICE health technology evaluation of robot-assisted surgery for soft tissue procedures estimated that the additional staff time cost for these procedures is £389, however the other costs and resource use such as the amount of additional staff time required associated with robot-assisted procedures were not publicly available. The analysis also applied to all soft tissue procedures not just nephrectomy, and the costs used for laparoscopic and open procedures were not comparable to the costs from the NHS Cost Collection we identified for nephrectomies, so we did not incorporate these findings into our estimate for cost of robot-assisted nephrectomy.

Given the uncertainty in the procedure-related costs, the committee therefore included a cost-effectiveness element in their research recommendation on comparing different minimally invasive surgeries to address this uncertainty.

The committee noted that minimally invasive procedures for radical nephrectomy usually have fewer complications and shorter length of hospital stay than open procedures, resulting in a lower use of resources and costs. The committee did not expect differences in oncological outcomes based on their experience and available evidence and subsequently any differences in their associated management costs. However, there may be a long-term benefit of preserved kidney function associated with minimally invasive procedures and potentially further cost savings e.g. due to avoided need for dialysis.

Minimally invasive procedures including robotic and laparoscopic procedures are already current practice where it is technically suitable and feasible for radical nephrectomy in people with locally advanced renal cell carcinoma, which means these recommendations are unlikely to have a substantial resource impact.

People with complex locally advanced RCC should be referred to a specialist uro-oncology multidisciplinary team with relevant expertise in managing kidney cancer and extensive retroperitoneal surgery. This can include a urologist with speciality in kidney cancer surgery, oncologist, radiologist, and pathologist. This reflects current good practice but may help standardise practice where it varies.

1.1.11.5 Other factors the committee took into account

The committee noted that MIRN, including robot-assisted radical nephrectomy, should currently be available to everyone whom it is suitable for based on lesion and patient characteristics, with the possible exception of people with IVC thrombus as this is not routinely performed in all specialist centres. However, they acknowledged that choosing MIRN would likely mean travelling to specialist or tertiary care centres, which may present difficulties for people with physical disabilities that affect mobility, people who lack access to suitable transport or cannot afford to pay for travel, and those with caring responsibilities. Although the committee noted the shorter hospital stays and lower risk of complications in specialist centres, they agreed that having to travel further to access these centres may also make it difficult to be accompanied or visited by a carer, spouse or family, and this may negatively impact the patient's experience in the immediate post-operative recovery period.

The committee highlighted that the decision about which surgical approach to use should be made as part of a discussion with patients, taking into account patient characteristics (such as comorbidities and disabilities), as well as tumour characteristics.

1.1.12 Recommendations supported by this evidence review

This evidence review supports recommendations 1.6.1, 1.7.1 to 1.7.2 and the research recommendation on different types of minimally invasive radical nephrectomy techniques.

1.1.13 References – included studies

1.1.13.1 Effectiveness

Bensalah, Karim, Salomon, Laurent, Lang, Herve et al. (2009) Survival of patients with nonmetastatic pT3 renal tumours: a matched comparison of laparoscopic vs open radical nephrectomy. BJU international 104(11): 1714-7

Bragayrac, Luciano A Nunez, Abbotoy, Daniel, Attwood, Kristopher et al. (2016) Outcomes of Minimal Invasive vs Open Radical Nephrectomy for the Treatment of Locally Advanced Renal-Cell Carcinoma. Journal of endourology 30(8): 871-6

Gershman, Boris, Moreira, Daniel M, Thompson, R Houston et al. (2017) Renal Cell Carcinoma with Isolated Lymph Node Involvement: Long-term Natural History and Predictors of Oncologic Outcomes Following Surgical Resection. European urology 72(2): 300-306

Laird, A, Choy, K C C, Delaney, H et al. (2015) Matched pair analysis of laparoscopic versus open radical nephrectomy for the treatment of T3 renal cell carcinoma. World journal of urology 33(1): 25-32

Patel, Premal, Nayak, Jasmir G, Liu, Zhihui et al. (2017) A Multicentered, Propensity Matched Analysis Comparing Laparoscopic and Open Surgery for pT3a Renal Cell Carcinoma. Journal of endourology 31(7): 645-650

Rose, Kyle M, Navaratnam, Anojan K, Faraj, Kassem S et al. (2020) Comparison of Open and Robot Assisted Radical Nephrectomy With Level I and II Inferior Vena Cava Tumor Thrombus: The Mayo Clinic Experience. Urology 136: 152-157

Vuong, Nam-Son, Ferriere, Jean-Marie, Michiels, Clement et al. (2021) Robot-assisted versus open surgery for radical nephrectomy with level 1-2 vena cava tumor thrombectomy: a French monocenter experience (UroCCR study #73). Minerva urology and nephrology 73(4): 498-508

1.1.13.2 Economic

No economic evidence was identified for this review.

1.1.13.3 Other

Camp C, O'Hara J, Hughes D, Adshead J. Short-term Outcomes and Costs Following Partial Nephrectomy in England: A Population-based Study. 2018. European urology focus, 4(4) 579-585.

National Institute for Health and Care Excellence (NICE). British National Formulary (BNF). Available from: https://bnf.nice.org.uk/

National Institute for Health and Care Excellence (NICE). Cabozantinib with nivolumab for untreated advanced renal cell carcinoma TA964. Available from: https://www.nice.org.uk/guidance/TA964

National Kidney Cancer Audit (NKCA). National Kidney Cancer Audit State of the Nation Report 2024. Available from https://www.natcan.org.uk/reports/nkca-state-of-the-nation-report-2024/

NHS England Getting It Right First Time (GIRFT). Urology: Towards better care for patients with kidney cancer. 2023. Available from https://gettingitrightfirsttime.co.uk/girft-guide-supports-better-care-for-people-with-kidney-cancer/

NHS England. National Cost Collection for the NHS 2023/24. Available from: https://www.england.nhs.uk/costing-in-the-nhs/national-cost-collection/

NICE (2025), Robot-assisted surgery for soft tissue procedures: early value assessment, https://www.nice.org.uk/guidance/hte21

Personal Social Services Research Unit. Unit Costs of Health and Social Care 2023. Published online 2023. Available from: https://www.pssru.ac.uk/unitcostsreport/

Rossi, S. H., Klatte, T., Usher-Smith, J. A., Fife, K., Welsh, S. J., Dabestani, S., Bex, A., Nicol, D., Nathan, P., Stewart, G. D., & Wilson, E. C. F. (2021). A Decision Analysis Evaluating Screening for Kidney Cancer Using Focused Renal Ultrasound. *European urology focus*, *7*(2), 407–419. https://doi.org/10.1016/j.euf.2019.09.002

Appendices

Appendix A – Review protocols

Effectiveness review protocol

ID	Field	Content
1.	Review title	Clinical and cost-effectiveness analysis of nephrectomy or stereotactic ablative radiotherapy for treating locally advanced renal cell carcinoma (RCC) in adults
2.	Review question	What is the clinical and cost effectiveness of nephrectomy or stereotactic ablative radiotherapy (SABR) for treating locally advanced renal cell carcinoma in adults?
3.	Objective	To evaluate and compare the effectiveness, safety, and cost-effectiveness of different nephrectomy techniques, and SABR for treating adults with locally advanced RCC.
4.	Searches	The following databases will be searched: • Cochrane Central Register of Controlled Trials (CENTRAL) • Cochrane Database of Systematic Reviews (CDSR) • Embase • MEDLINE • Epistemonikos • INAHTA For the economics review the following databases will be searched: • Embase • MEDLINE • Medline in Process • Medline EPub Ahead of Print • Econlit • HTA (legacy records) • NHS EED (legacy records) • INAHTA Searches will be restricted by: • Date limitations: None • English language • Human studies • Abstracts, conference presentations and theses will be excluded • Systematic reviews with or without meta-analysis and randomized clinical trials (RCTs) will be included.

		The full search strategies for MEDLINE database will be published in the final review.
5.	Condition or domain being studied	Locally advanced renal cell carcinoma
6.	Population	Adults (18 years or older) with a diagnosis of locally advanced RCC confirmed according to the clinical or pathological TNM classification (usually stage 3 [T1-T2 N1 M0, T3 any N, M0]) and who are eligible for surgery. Exclusion: • Adults with locally advanced inoperable or metastatic RCC. • Adults with localised RCC
7.	Intervention	Nephrectomy which can be carried out with extensions to surgery (such as removal of local and/or regional lymph nodes or the adrenal gland and IVC thrombectomy)
8.	Comparator	1. Stereotactic ablative radiotherapy or 2. Different surgical techniques for nephrectomy Different surgical techniques for nephrectomy, include open, laparoscopic, or robotic-assisted surgery.
9.	Types of study to be included	Systematic reviews of RCTs and RCTs are preferred where available for a comparison. Where RCTs are not available for a comparison, systematic reviews of non-randomised comparative studies and primary non-randomised comparative studies published after the systematic reviews will be considered. Where good quality systematic reviews of non-randomised studies are identified, these may be used completely or as a source of references (limited to cohort studies only), depending on applicability. Where individual primary non-randomised comparative studies are included to update a good quality systematic review or where a full evidence review is required, these will be limited to prospective and retrospective cohort studies.
10.	Other exclusion criteria	• Abstracts, conference presentations and theses • Non-human studies • Non-English language studies
11.	Context	There is currently no national guideline in the UK on the diagnosis and treatment of kidney cancer and audit data indicates variation in the clinical practice within NHS. Stakeholders identified this gap and NICE was commissioned to develop a guideline on kidney cancer by NHSE. The therapeutic approach to locally advanced RCC is guided by the probability of cure, which is related directly

		to the stage or degree of tumour dissemination. Surgery, extensions to surgery (such as removal of local and/or regional lymph nodes or the adrenal gland), and stereotactic ablative radiotherapy may play an important role in this setting, particularly delaying disease progression and increasing the median survival time. Therefore a review or the evidence is needed to evaluate the clinical and cost effectiveness of these interventions.
12.	Outcomes	• Disease-free survival, including cancer-free survival Some studies may report disease-free survival as, local recurrence, or distant metastases (dichotomous data). These will be extracted as proxy outcomes where survival data is not reported in the studies. • Overall survival (time to event data) • Cancer-specific survival (time to event data) • Severe adverse events and complications reported as: For SABR vs surgery: Grades 3 or 4 classified by Common Terminology Criteria for Adverse Events (CTCAE); dichotomous data) For different surgical techniques: o observed in the intraoperative period (measured according to Intraoperative Adverse Incident Classification – EAUiaiC; dichotomous data) o observed in the postoperative period (according to Clavien-Dindo Classification of Surgical Classifications at 30-days and 90-day period after surgery; dichotomous data) • Long-term severe adverse events o Renal function impairment measured by estimated glomerular filtration rate (eGFR; dichotomous or continuous data) o Cardiovascular events (dichotomous data) • Number of hospital re-admissions (continuous data) • Duration of hospital stay (continuous data) • Quality of life using: o EORTC Core Quality of Life Questionnaire (EORTC QLQ-C30; dichotomous or continuous data) o EuroQol-5 dimensions (EQ-5D; dichotomous or continuous data) **Minimal important differences:** • Any statistically significant difference will be used for the following outcomes: • Disease-free survival • Cancer-specific survival

		• Serious adverse events and complications • Long-term adverse events • Number of hospital admissions • Duration of hospital stay • Quality of life using EORTC QLQ-C30 MIDs for the following quality of life measure was identified in the literature: EQ-5D: 0.08 for UK-based scores and 0.07 for VAS scores
13.	Data extraction (selection and coding)	All references identified by the searches and from other sources will be uploaded into EPPI reviewer and de-duplicated. 10% of the abstracts will be reviewed by two reviewers, with any disagreements resolved by discussion or, if necessary, a third independent reviewer. The full text of potentially eligible studies will be retrieved and will be assessed in line with the criteria outlined above. A standardised form will be used to extract data from studies (see Developing NICE guidelines: the manual section 6.2). Study investigators may be contacted for missing data where time and resources allow. This review may make use of the priority screening functionality within the EPPI-reviewer software. If priority screening is used, the following rules will be adopted to determine when to stop screening: • at least 50% of the identified abstracts (or 1,000 records, if that is a greater number) will be screened • After this point, screening is only terminated if a threshold of 750 is met for a number of abstracts being screened without a single new include being identified. • if sifting is terminated before the full database has been looked at additional checks will be carried out to ensure that relevant studies have not been missed.
14.	Risk of bias (quality) assessment	Risk of bias will be carried out using the preferred checklists as described in Appendix H of Developing NICE guidelines: the manual. The risk of bias for RCTs will be assessed using the Cochrane Risk of Bias v.2.0 checklist and for systematic reviews, the Risk of Bias in Systematic Reviews (ROBIS) tool will be used. The risk of bias for non-RCT studies will be assessed using the Cochrane Risk Of Bias In Non-randomized Studies - of Interventions (ROBINS-I) tool

15.	Strategy for data synthesis	Where possible, meta-analyses will be conducted to combine the results of quantitative studies for each outcome. RCT and non-RCT data will be pooled separately. Where data can be disambiguated it will be separated into the subgroups identified in section 17 (below). Pairwise meta-analyses will be performed in Cochrane Review Manager V5.3. Continuous outcomes will be analysed as pooled mean differences (using the inverse variance method) unless multiple scales are used to measure the same factor. In these cases, standardised mean differences will be used instead. Where different studies present continuous data measuring the same outcome but using different numerical scales (e.g. a 0-10 and a 0-100 visual analogue scale), these outcomes will all converted to the same scale before meta-analysis is conducted on the mean differences. Pooled relative risks will be calculated for dichotomous outcomes (using the Mantel–Haenszel method) reporting numbers of people having an event. Absolute risks will be presented where possible. Hazard ratios will be pooled using the generic inverse-variance method. Adjusted, unadjusted and partially adjusted hazard ratios will be pooled. Sensitivity analysis will be carried out to look at the effect of removing partially and unadjusted studies For survival outcomes, time-to-event data is preferred. Where this data is not available, relative risks will be calculated for proxy outcomes as described in section 12. Fixed- and random-effects models (der Simonian and Laird) will be fitted for all outcomes, with the presented analysis dependent on the degree of heterogeneity in the assembled evidence. Fixed-effects models will be deemed to be inappropriate if one or both of the following conditions are met: • Significant between-study heterogeneity in methodology, population, intervention, or comparator was identified by the reviewer in advance of data analysis. • The presence of significant statistical heterogeneity in the meta-analysis, defined as $I^2 \geq 50\%$.

		GRADE will be used to assess the quality of the outcomes. Data from randomised controlled trials and non-randomised comparative trials will be initially rated as high quality where they come from: • RCTs and systematic reviews of RCTs (where individual studies have been quality assessed using Cochrane risk of bias) • non-randomised comparative trials and systematic reviews of non-randomised studies (where individual studies have been quality assessed using the ROBINS-I assessment tool) The quality of the evidence for each outcome will then be downgraded or not from this starting point based on the other GRADE domains. To assess imprecision, where there are no defined MIDs we will set the MID as the line of no effect for all outcomes except for (1.0 for dichotomous outcomes and 0 for continuous outcomes). A second decision threshold will be applied where the sample size is sufficiently small that it is not plausible any realistic effect size could have been detected. Where 10 or more studies are included as part of a single meta-analysis, a funnel plot will be produced to graphically (visually) assess the potential for publication bias.
16.	Analysis of sub-groups	Where the data allows, subgroup analyses may be conducted to explore heterogeneity considering the following: • by surgical techniques carried out, • age • by TNM classification • by primary RCC type e.g. clear cell, papillary, chromophobe • renal function at baseline, and • performance status of the person at baseline (e.g. ECOG and Karnofsky).
17.	Type and method of review	X Intervention Diagnostic Prognostic Qualitative Epidemiologic Service Delivery Other (please specify)
18.	Language	English
19.	Country	England

20.	Anticipated or actual start date	July 2024		
21.	Anticipated completion date	March 2026		
22.	Stage of review at time of this submission	**Review stage**	**Started**	**Completed**
		Preliminary searches		X
		Piloting of the study selection process		X
		Formal screening of search results against eligibility criteria		X
		Data extraction		X
		Risk of bias (quality) assessment		X
		Data analysis		X
23.	Named contact	**Named contact** Centre for Guidelines, NICE **Named contact e-mail** kidneycancerguideline@nice.org.uk **Organisational affiliation of the review** National Institute for Health and Care Excellence (NICE) and Guideline Development Team.		
24.	Review team members	From the Guideline Development Team: • Steve Sharp, Technical adviser • Sarah Boyce, Senior technical analyst • Fernando Zanghelini, Technical analyst • Lucy Beggs, Health economics adviser • Hannah Tebbs, Health economist • Yuanyuan Zhang, Health economist • Amy Finnegan, Senior Information specialist		
25.	Funding sources/sponsor	This systematic review is being completed by the Guideline Development Team which receives funding from NICE.		
26.	Conflicts of interest	All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person		

		from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the minutes of the meeting. Declarations of interests will be published with the final guideline.
27.	Collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual. Members of the guideline committee are available on the NICE website: Kidney Cancer (GID-NG10398).
28.	Other registration details	None
29.	Reference/URL for published protocol	None
30.	Dissemination plans	NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as: • notifying registered stakeholders of publication • publicising the guideline through NICE's newsletter and alerts issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE.
31.	Keywords	Locally advanced renal cell carcinoma, adjuncts surgery, radiotherapy, stereotactic ablative radiotherapy, active surveillance
32.	Details of existing review of same topic by same authors	Not applicable
33.	Current review status	Ongoing Completed but not published X Completed and published Completed, published and being updated Discontinued
34.	Additional information	None
35.	Details of final publication	www.nice.org.uk

Economic review protocol

ID	Field	Content
1.	Review title	A: Cost-effectiveness of partial versus radical nephrectomy in adults with localised renal cell carcinoma B: Cost-effectiveness of non-surgical interventions or active surveillance in adults with localised renal cell carcinoma C: Cost-effectiveness of nephrectomy or stereotactic ablative radiotherapy for treating locally advanced renal cell carcinoma in adults H1: Cost-effectiveness of non-pharmacological interventions, used before systemic anti-cancer therapy for adults with advanced renal cell carcinoma H2: Cost-effectiveness of non-pharmacological interventions, used after systemic anti-cancer therapy for adults with advanced renal cell carcinoma
2.	Objective	To identify economic studies for all relevant guideline review questions on the management of renal cell carcinoma
3.	Inclusion criteria	• Populations, interventions and comparators as specified in the effectiveness review protocol. • Relevant comparative economic study design: cost–utility analysis • Decision analytic model-based or within-trial economic analyses • OECD countries (except USA) • Healthcare and personal social services cost perspective • Studies published from 2010 – this cut off has been applied to restrict the review to more recent studies which will have more applicable resource use and costs High-quality studies in line with the NICE reference case (recent UK NHS/PSS cost-utility analyses using the QALY as the measure of outcome) are the most applicable to NICE decision making. Not all studies meeting the inclusion criteria will therefore necessarily be used in decision-making - see Review strategy below for details.
4.	Exclusion criteria	• Conference posters or abstract only studies – these do not provide sufficient information for quality assessment. • Studies published before 2010 – this cut off has been applied to restrict the review to more recent studies which will have more applicable resource use and costs • Studies from non-OECD countries or the USA – these are considered unlikely to be applicable to the UK NHS setting due to substantial differences in healthcare delivery and unit costs. • Non-comparative economic analyses including cost-of-illness studies. • Letters, editorials or commentaries, study protocols or reviews of economic evaluations (recent reviews will be ordered and the bibliographies will be checked for relevant individual economic studies, which will then be ordered and checked for eligibility). • Non-English language papers. • Studies considering exclusively intervention costs, e.g. medicine acquisition costs, without considering wider healthcare costs associated with the management of renal cell carcinoma.

		• Studies comparing costs of branded vs generic forms of the same medicine. • Studies only focussing on productivity losses or gains.
5.	Search strategy	An economic study search will be undertaken covering all review questions relating to the management of renal cell carcinoma using guideline population-specific terms and a health economic study filter. For search details see appendix B below. The following databases will be searched: • MEDLINE All, Ovid • Embase, Ovid • International HTA database, International Network of Agencies for Health Technology Assessment (INAHTA) • Econlit • NHS EED and HTA (legacy records)
6.	Review strategy	• Studies meeting the inclusion and exclusion criteria will be assessed for applicability and methodological limitations using the NICE economic evaluation checklist in appendix H of Developing NICE guidelines: the manual. • The NICE economic evaluation checklist assesses: ○ Applicability to the NICE guideline decision making context with consideration of the NICE reference case relevant to the guideline. Recent UK studies that use the NICE reference case methods are the most applicable when considering cost effectiveness. ○ Methodological limitations. • The aim is to present the best available economic evidence to inform committee decision-making in the context of the guideline, the current UK NHS setting and NICE methods. Therefore, the health economist may not present all studies that meet inclusion criteria. If recent high quality, UK cost-utility analyses are available for a question, it is often not deemed informative to present studies that are less applicable or lower quality such as older UK analyses or analyses from other countries. A similar principle is deemed to apply more generally when considering applicability and methodological limitations. Some specific examples are given below: ○ If multiple versions of a model are available for the UK and other countries it is usually reasonable to only present the UK version. ○ If multiple versions of the same UK model are available, it is usually reasonable to present only the most recent. ○ If there has been a NICE MTA or guideline model that informs current NHS practice it is usually reasonable not to present older studies, unless they address a different subpopulation or other specific issue. ○ If a UK model that includes all interventions in the decision space is available it may be reasonable not to present studies that only include individual or fewer interventions, if the analysis is sufficiently applicable and of good methodological quality.

		• Quality and relevance of effectiveness data used in the economic analysis: the more closely the clinical effectiveness data used in the economic analysis match with the outcomes of the studies included in the clinical review the more useful the analysis will be for decision-making in the guideline.
		• Hierarchy of economic evaluation evidence based on quality assessment
		  ○ 'Directly applicable' and 'Minor limitations' (only recent UK CUAs can get this rating). Usually presented and used in decision-making.
		  ○ Directly or partially applicable combined with minor or potentially serious limitations (other than 1). Discretion over whether these are presented and used in decision-making, depending on the availability of more relevant evidence.
		  ○ 'Not applicable' or 'Very serious limitations'. Typically not presented and not used in decision-making.
		
		The health economist will make a decision based on the relative applicability and quality of the available evidence for each question, in discussion with the guideline committee if required. All decisions will be transparently reported in the evidence report. Studies that are presented to the committee and used in decision-making when formulating recommendations will be included in the summary tables and will have an evidence extraction. Other studies may not be presented to the committee in detail but will be listed, with the reason for not being presented to the committee and thus not used in decision-making being provided. Committee members can review and query the decision not to present studies with the health economist and will be provided with full details of these studies where requested.

Appendix B – Literature search strategies

Background and development

Search design and peer review

A NICE Senior Information Specialist (SIS) conducted the literature searches. The MEDLINE strategies below were quality assured (QA) by another NICE SIS. All translated search strategies were peer reviewed to ensure their accuracy. Both procedures were adapted from the Peer Review of Electronic Search Strategies Guideline Statement (for further details see: McGowan J et al. PRESS 2015 Guideline Statement. *Journal of Clinical Epidemiology*, 75, 40-46).

The principal search strategies were developed in MEDLINE (Ovid interface) and adapted, as appropriate, for use in the other sources listed in the protocol, taking into account their size, search functionality and subject coverage.

This search report is based on the requirements of the PRISMA Statement for Reporting Literature Searches in Systematic Reviews (for further details see: Rethlefsen M et al. PRISMA-S. *Systematic Reviews*, 10(1), 39).

Review management

The search results were managed in EPPI-Reviewer v5. Duplicates were removed in EPPI-R5 using a two-step process. First, automated deduplication is performed using a high-value algorithm. Second, manual deduplication is used to assess "low-probability" matches. All decisions made for the review can be accessed via the deduplication history.

Prior work

A test set of 8 systematic reviews were supplied by the technical analysts, this test set covered the current review (review C) and reviews A, B, H1 and H2 combined (review A: surgical interventions for localised RCC, review B: non-surgical interventions for localised RCC, reviews H1 and H2: non-pharmacological management of advanced RCC).

Search limits and other restrictions

Formats

Limits were applied in adherence to standard NICE practice and the review protocol to exclude:

- Animal studies

- Editorials, letters, news items and commentaries
- Conference abstracts and posters
- Registry entries for ongoing clinical trials or those that contain no results
- Theses and dissertations
- Papers not published in the English language.

The limit to remove animal studies in the searches was the standard NICE practice, which has been adapted from:

> Dickersin K, Scherer R & Lefebvre C. (1994) Systematic Reviews: Identifying relevant studies for systematic reviews. *BMJ*, 309(6964), 1286.

Date limits

No date limits were applied, in adherence to the review protocol.

Search filters and classifiers

Effectiveness searches

OECD:

The OECD countries filters were used without modification:

Ayiku, L., Hudson, T., Williams, C., Levay, P., & Jacob, C. (2021). The NICE OECD countries' geographic search filters: Part 2 - Validation of the MEDLINE and Embase (Ovid) filters. Journal of the Medical Library Association, 109(4), 583–589.

Observational filter:

The terms used for observational studies are standard NICE practice that have been developed in house.

Systematic reviews filters:

Lee, E. et al. (2012) An optimal search filter for retrieving systematic reviews and meta-analyses. BMC Medical Research Methodology, 12(1), 51.

In MEDLINE, the standard NICE modifications were used: pubmed.tw added; systematic review.pt added from MeSH update 2019.

In Embase, the standard NICE modifications were used: pubmed.tw added to line medline.tw.

Randomised controlled trial filters:

McMaster Therapy – Medline – "best balance of sensitivity and specificity" version:

The standard NICE modifications were used: the MeSH heading *randomized controlled trial/*, which is equivalent *to randomized controlled trial.pt* was exploded to capture newer, narrower *terms equivalence trial/ and pragmatic clinical trial*. The free-text term *randomized.mp* was also changed to the (more inclusive) alternative *randomi?ed.mp.* to capture both UK and US spellings.

Haynes RB e al. (2005) Optimal search strategies for retrieving scientifically strong studies of treatment from Medline: analytical survey. BMJ, 330, 1179-1183.

McMaster Therapy – Embase "best balance of sensitivity and specificity" version:

Wong SSL et al. (2006) Developing optimal search strategies for detecting clinically sound treatment studies in EMBASE. Journal of the Medical Library Association, 94(1), 41-47.

Cost effectiveness searches

In line with the review protocol, the precise version of the validated NICE cost utility filter was used in the MEDLINE and Embase strategies without amendment.

> Hubbard W et al. (2022) Development and validation of paired MEDLINE and Embase search filters for cost-utility studies. *BMC Medical Research Methodology*, 22(1), 310.

Key decisions

A single systematic search was carried out to identify potentially relevant studies for the current review (review C) and reviews A, B, H1 and H2 combined (review A: surgical interventions for localised RCC, review B: non-surgical interventions for localised RCC, reviews H1 and H2: non-pharmacological management of advanced RCC).

Clinical searches

Database results

Database	Date searched	Database Platform	Database segment or version	No. of results downloaded
Cochrane Central Register of Controlled Trials (CENTRAL)	18/01/2024	Wiley	Issue 1 of 12, January 2024	767
Cochrane Database of Systematic Reviews (CDSR)	18/01/2024	Wiley	Issue 1 of 12, January 2024	8
Embase	18/01/2024	Ovid	1974 to 2024 January 18	13394
Epistemonikos	18/01/2024	Epistemonikos	n/a	1993
INAHTA	18/01/2024	INAHTA	n/a	97
MEDLINE ALL	18/01/2024	Ovid	1946 to January 17, 2024	9991

Rerun search database results

Databases	Date searched	Database platform	Database segment or version	No. of results downloaded
Cochrane Central Register of Controlled Trials (CENTRAL)	14/02/2025	Wiley	Issue 2 of 12, February 2025	845
Cochrane Database of Systematic Reviews (CDSR)	14/02/2025	Wiley	Issue 2 of 12, February 2025	8
Embase	14/02/2025	Ovid	1974 to 2025 February 13	14588
Epistemonikos	14/02/2025	Epistemonikos	n/a	2350
INAHTA	14/02/2025	INAHTA	n/a	177

Databases	Date searched	Database platform	Database segment or version	No. of results downloaded
MEDLINE ALL	14/02/2025	Ovid	1946 to February 13, 2025	10686

No date limits were applied to the rerun searches due to technical issues in OVID. Duplication of records was managed in EPPI Reviewer 5.

Search strategy history

Database name: Medline ALL

Searches
1 exp Kidney Neoplasms/ (85773) 2 (Kidney* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or stage-4)).ti,ab. (17162) 3 (collecting-duct* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4)).ti,ab. (490) 4 (renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumo?r* or grawitz-tumo?r* or hypernephroma* or nephrocarcinoma*).ti,ab. (70604) 5 (Kidney* adj2 (Transitional-cell* or cell or urothelial* or duct or advanc*) adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma*)).ti,ab. (808) 6 or/1-5 (118618) 7 exp nephrectomy/ (37938) 8 (nephrectom* or lymphadenectom*).ti,ab,kw. (62205) 9 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) adj3 (remov* or surg* or extract* or extirpat* or operat*)).ti,ab. (204663) 10 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) and (remov* or surg* or extract* or extirpat* or operat*)).kf. (59909) 11 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) adj3 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (918105) 12 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) and (surg* or remov* or partial* or procedur* or treat* or operat*)).kf. (21870) 13 (nephron* adj2 (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)).ti,ab. (2661) 14 (nephron* and (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)).kf. (446) 15 radiotherapy/ or lymphatic irradiation/ or radiosurgery/ or radiotherapy, adjuvant/ or radiotherapy dosage/ or radiotherapy, high-energy/ or re-irradiation/ or Cytoreduction Surgical Procedures/ or Ablation Techniques/ or Radiofrequency Ablation/ or Robotic

Searches
Surgical Procedures/ or Minimally Invasive Surgical Procedures/ or Metastasectomy/ or Lymph Node Excision/ or Watchful Waiting/ (239644) 16 (radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or SABR).ti,ab,kw. (933898) 17 ((RAS or (robotic* adj1 assist*)) adj1 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (2177) 18 ((RAS or (robotic* adj1 assist*)) and (surg* or remov* or partial* or procedur* or treat* or operat*)).kw. (11) 19 (minimal* adj2 invas* adj2 (surg* or procedur* or treat*)).ti,ab. (38472) 20 (minimal* and invas* and (surg* or procedur* or treat*)).kw. (5) 21 ((inferior-vena-cava or IVC) adj2 thrombectom*).ti,ab. (279) 22 ((inferior-vena-cava or IVC) and thrombectom*).kw. (26) 23 ((activ* or tumo?r* or delay*) adj2 (surveil* or monitor*)).ti,ab. (38392) 24 ((activ* or tumo?r* or delay*) and (surveil* or monitor*)).kw. (266) 25 (delay* adj2 treat*).ti,ab. (20889) 26 (delay* and treat*).kw. (162) 27 (watchful* adj1 wait*).ti,ab. (3238) 28 (watchful* and wait*).kw. (4) 29 or/7-28 (2201330) 30 6 and 29 (38582) 31 animals/ not humans/ (5153512) 32 30 not 31 (36911) 33 limit 32 to english language (30806) 34 limit 33 to (letter or historical article or comment or editorial or news or case reports) (9081) 35 33 not 34 (21725) 36 exp Randomized Controlled Trial/ (608436) 37 randomi?ed.mp. (1099661) 38 placebo.mp. (252799) 39 or/36-38 (1166623) 40 (MEDLINE or pubmed).tw. (344612) 41 systematic review.tw. (287748) 42 systematic review.pt. (249879) 43 meta-analysis.pt. (193317) 44 intervention$.ti. (208375) 45 or/40-44 (719849) 46 Epidemiologic studies/ (9465) 47 exp case control studies/ (1474038) 48 exp cohort studies/ (2562056) 49 Case control.tw. (159034) 50 (cohort adj (study or studies)).tw. (337093) 51 Cohort analy$.tw. (12565) 52 (Follow up adj (study or studies)).tw. (57443) 53 (observational adj (study or studies)).tw. (171478) 54 Longitudinal.tw. (336148) 55 Retrospective.tw. (784597) 56 Cross sectional.tw. (542555) 57 Cross-sectional studies/ (489693) 58 or/46-57 (3917614) 59 39 or 45 or 58 (5240090) 60 35 and 59 (10204)

Searches
61 afghanistan/ or africa/ or africa, northern/ or africa, central/ or africa, eastern/ or "africa south of the sahara"/ or africa, southern/ or africa, western/ or albania/ or algeria/ or andorra/ or angola/ or "antigua and barbuda"/ or argentina/ or armenia/ or azerbaijan/ or bahamas/ or bahrain/ or bangladesh/ or barbados/ or belize/ or benin/ or bhutan/ or bolivia/ or borneo/ or "bosnia and herzegovina"/ or botswana/ or brazil/ or brunei/ or bulgaria/ or burkina faso/ or burundi/ or cabo verde/ or cambodia/ or cameroon/ or central african republic/ or chad/ or exp china/ or comoros/ or congo/ or cote d'ivoire/ or croatia/ or cuba/ or "democratic republic of the congo"/ or cyprus/ or djibouti/ or dominica/ or dominican republic/ or ecuador/ or egypt/ or el salvador/ or equatorial guinea/ or eritrea/ or eswatini/ or ethiopia/ or fiji/ or gabon/ or gambia/ or "georgia (republic)"/ or ghana/ or grenada/ or guatemala/ or guinea/ or guinea-bissau/ or guyana/ or haiti/ or honduras/ or independent state of samoa/ or exp india/ or indian ocean islands/ or indochina/ or indonesia/ or iran/ or iraq/ or jamaica/ or jordan/ or kazakhstan/ or kenya/ or kosovo/ or kuwait/ or kyrgyzstan/ or laos/ or lebanon/ or liechtenstein/ or lesotho/ or liberia/ or libya/ or madagascar/ or malaysia/ or malawi/ or mali/ or malta/ or mauritania/ or mauritius/ or mekong valley/ or melanesia/ or micronesia/ or monaco/ or mongolia/ or montenegro/ or morocco/ or mozambique/ or myanmar/ or namibia/ or nepal/ or nicaragua/ or niger/ or nigeria/ or oman/ or pakistan/ or palau/ or exp panama/ or papua new guinea/ or paraguay/ or peru/ or philippines/ or qatar/ or "republic of belarus"/ or "republic of north macedonia"/ or romania/ or exp russia/ or rwanda/ or "saint kitts and nevis"/ or saint lucia/ or "saint vincent and the grenadines"/ or "sao tome and principe"/ or saudi arabia/ or serbia/ or sierra leone/ or senegal/ or seychelles/ or singapore/ or somalia/ or south africa/ or south sudan/ or sri lanka/ or sudan/ or suriname/ or syria/ or taiwan/ or tajikistan/ or tanzania/ or thailand/ or timor-leste/ or togo/ or tonga/ or "trinidad and tobago"/ or tunisia/ or turkmenistan/ or uganda/ or ukraine/ or united arab emirates/ or uruguay/ or uzbekistan/ or vanuatu/ or venezuela/ or vietnam/ or west indies/ or yemen/ or zambia/ or zimbabwe/ (1322150) 62 "organisation for economic co-operation and development"/ (581) 63 australasia/ or exp australia/ or austria/ or baltic states/ or belgium/ or exp canada/ or chile/ or colombia/ or costa rica/ or czech republic/ or exp denmark/ or estonia/ or europe/ or finland/ or exp france/ or exp germany/ or greece/ or hungary/ or iceland/ or ireland/ or israel/ or exp italy/ or exp japan/ or korea/ or latvia/ or lithuania/ or luxembourg/ or mexico/ or netherlands/ or new zealand/ or north america/ or exp norway/ or poland/ or portugal/ or exp "republic of korea"/ or "scandinavian and nordic countries"/ or slovakia/ or slovenia/ or spain/ or sweden/ or switzerland/ or turkey/ or exp united kingdom/ or exp united states/ (3526314) 64 european union/ (17879) 65 developed countries/ (21470) 66 or/62-65 (3542495) 67 61 not 66 (1231834) 68 60 not 67 (9991)

Database name: Embase

Searches
1 exp kidney tumor/ (169289)

Searches
2 (Kidney* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or stage-4)).ti,ab. (25843)
3 (collecting-duct* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4)).ti,ab. (738)
4 (renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumo?r* or grawitz-tumo?r* or hypernephroma* or nephrocarcinoma*).ti,ab. (105763)
5 (Kidney* adj2 (Transitional-cell* or cell or urothelial* or duct or advanc*) adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma*)).ti,ab. (1179)
6 or/1-5 (199212)
7 exp nephrectomy/ (79135)
8 (nephrectom* or lymphadenectom*).ti,ab,kw. (95869)
9 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) adj3 (remov* or surg* or extract* or extirpat* or operat*)).ti,ab. (296316)
10 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) and (remov* or surg* or extract* or extirpat* or operat*)).kf. (84073)
11 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) adj3 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (1172497)
12 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) and (surg* or remov* or partial* or procedur* or treat* or operat*)).kf. (39682)
13 (nephron* adj2 (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)).ti,ab. (4849)
14 (nephron* and (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)).kf. (923)
15 radiotherapy/ or cancer radiotherapy/ or adjuvant radiotherapy/ or exp radiosurgery/ or radiotherapy dosage/ or megavoltage radiotherapy/ or re-irradiation/ or cytoreductive surgery/ or ablation therapy/ or radiofrequency ablation/ or robot assisted surgery/ or minimally invasive surgery/ or metastasis resection/ or lymph node dissection/ or cryotherapy/ or stereotactic body radiation therapy/ or active surveillance/ or watchful waiting/ (700411)
16 (radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or SABR).ti,ab,kw. (1245790)
17 ((RAS or (robotic* adj1 assist*)) adj1 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (3847)
18 ((RAS or (robotic* adj1 assist*)) and (surg* or remov* or partial* or procedur* or treat* or operat*)).kw. (21)
19 (minimal* adj2 invas* adj2 (surg* or procedur* or treat*)).ti,ab. (58741)
20 (minimal* and invas* and (surg* or procedur* or treat*)).kw. (8)
21 ((inferior-vena-cava or IVC) adj2 thrombectom*).ti,ab. (642)
22 ((inferior-vena-cava or IVC) and thrombectom*).kw. (36)
23 ((activ* or tumo?r* or delay*) adj2 (surveil* or monitor*)).ti,ab. (56960)
24 ((activ* or tumo?r* or delay*) and (surveil* or monitor*)).kw. (432)
25 (delay* adj2 treat*).ti,ab. (32640)

Searches
26 (delay* and treat*).kw. (278) 27 (watchful* adj1 wait*).ti,ab. (4967) 28 (watchful* and wait*).kw. (8) 29 or/7-28 (3008790) 30 6 and 29 (72417) 31 nonhuman/ not human/ (5369703) 32 30 not 31 (70586) 33 limit 32 to english language (63135) 34 33 not (letter or editorial).pt. (61048) 35 34 not (conference abstract* or conference review or conference paper or conference proceeding).db,pt,su. (41463) 36 random:.tw. (2023923) 37 placebo:.mp. (532136) 38 double-blind:.tw. (248720) 39 or/36-38 (2304835) 40 (MEDLINE or pubmed).tw. (428718) 41 exp systematic review/ or systematic review.tw. (533296) 42 meta-analysis/ (304008) 43 intervention$.ti. (274290) 44 or/40-43 (1007209) 45 Clinical study/ (165319) 46 Case control study/ (212430) 47 Family study/ (25771) 48 Longitudinal study/ (205110) 49 Retrospective study/ (1556506) 50 comparative study/ (1042643) 51 Prospective study/ (902470) 52 Randomized controlled trials/ (268035) 53 51 not 52 (891477) 54 Cohort analysis/ (1106561) 55 cohort analy$.tw. (20347) 56 (Cohort adj (study or studies)).tw. (487394) 57 (Case control$ adj (study or studies)).tw. (176315) 58 (follow up adj (study or studies)).tw. (75066) 59 (observational adj (study or studies)).tw. (266587) 60 (epidemiologic$ adj (study or studies)).tw. (124259) 61 (cross sectional adj (study or studies)).tw. (359262) 62 case series.tw. (152596) 63 prospective.tw. (1133006) 64 retrospective.tw. (1304827) 65 or/45-50,53-64 (5603678) 66 39 or 44 or 65 (7885322) 67 35 and 66 (13670) 68 afghanistan/ or africa/ or "africa south of the sahara"/ or albania/ or algeria/ or andorra/ or angola/ or argentina/ or "antigua and barbuda"/ or armenia/ or exp azerbaijan/ or bahamas/ or bahrain/ or bangladesh/ or barbados/ or belarus/ or belize/ or benin/ or bhutan/ or bolivia/ or borneo/ or exp "bosnia and herzegovina"/ or botswana/ or exp brazil/ or brunei darussalam/ or bulgaria/ or burkina faso/ or burundi/ or cambodia/ or cameroon/ or cape verde/ or central africa/ or central african republic/ or chad/ or exp china/ or comoros/ or congo/ or cook islands/ or cote d'ivoire/ or croatia/ or cuba/ or cyprus/ or democratic republic congo/ or djibouti/ or dominica/ or dominican republic/ or ecuador/ or el salvador/ or egypt/

Searches
or equatorial guinea/ or eritrea/ or eswatini/ or ethiopia/ or exp "federated states of micronesia"/ or fiji/ or gabon/ or gambia/ or exp "georgia (republic)"/ or ghana/ or grenada/ or guatemala/ or guinea/ or guinea-bissau/ or guyana/ or haiti/ or honduras/ or exp india/ or exp indonesia/ or iran/ or exp iraq/ or jamaica/ or jordan/ or kazakhstan/ or kenya/ or kiribati/ or kosovo/ or kuwait/ or kyrgyzstan/ or laos/ or lebanon/ or liechtenstein/ or lesotho/ or liberia/ or libyan arab jamahiriya/ or madagascar/ or malawi/ or exp malaysia/ or maldives/ or mali/ or malta/ or mauritania/ or mauritius/ or melanesia/ or moldova/ or monaco/ or mongolia/ or "montenegro (republic)"/ or morocco/ or mozambique/ or myanmar/ or namibia/ or nauru/ or nepal/ or nicaragua/ or niger/ or nigeria/ or niue/ or north africa/ or oman/ or exp pakistan/ or palau/ or palestine/ or panama/ or papua new guinea/ or paraguay/ or peru/ or philippines/ or polynesia/ or qatar/ or "republic of north macedonia"/ or romania/ or exp russian federation/ or rwanda/ or sahel/ or "saint kitts and nevis"/ or "saint lucia"/ or "saint vincent and the grenadines"/ or saudi arabia/ or senegal/ or exp serbia/ or seychelles/ or sierra leone/ or singapore/ or "sao tome and principe"/ or solomon islands/ or exp somalia/ or south africa/ or south asia/ or south sudan/ or exp southeast asia/ or sri lanka/ or sudan/ or suriname/ or syrian arab republic/ or taiwan/ or tajikistan/ or tanzania/ or thailand/ or timor-leste/ or togo/ or tonga/ or "trinidad and tobago"/ or tunisia/ or turkmenistan/ or tuvalu/ or uganda/ or exp ukraine/ or exp united arab emirates/ or uruguay/ or exp uzbekistan/ or vanuatu/ or venezuela/ or viet nam/ or western sahara/ or yemen/ or zambia/ or zimbabwe/ (1736652) 69 exp "organisation for economic co-operation and development"/ (2827) 70 exp australia/ or "australia and new zealand"/ or austria/ or baltic states/ or exp belgium/ or exp canada/ or chile/ or colombia/ or costa rica/ or czech republic/ or denmark/ or estonia/ or europe/ or exp finland/ or exp france/ or exp germany/ or greece/ or hungary/ or iceland/ or ireland/ or israel/ or exp italy/ or japan/ or korea/ or latvia/ or lithuania/ or luxembourg/ or exp mexico/ or netherlands/ or new zealand/ or north america/ or exp norway/ or poland/ or exp portugal/ or scandinavia/ or sweden/ or slovakia/ or slovenia/ or south korea/ or exp spain/ or switzerland/ or "Turkey (republic)"/ or exp united kingdom/ or exp united states/ or western europe/ (3832351) 71 european union/ (31891) 72 developed country/ (35945) 73 or/69-72 (3866518) 74 68 not 73 (1580645) 75 67 not 74 (13394)

Database name: Cochrane CDSR & CENTRAL

Searches
#1 MeSH descriptor: [Kidney Neoplasms] explode all trees 1694 #2 (Kidney* NEAR/2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or stage-4)):ti,ab 1332 #3 (collecting-duct* NEAR/2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4)):ti,ab 14 #4 (renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumor* or renal-tumour* or grawitz-tumor* or grawitz-tumour* or hypernephroma* or nephrocarcinoma*):ti,ab 3747

Searches
#5 (Kidney* NEAR/2 (Transitional-cell* or cell or urothelial* or duct or advanc*) NEAR/2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma*)):ti,ab 69 #6 {or #1-#5} 5140 #7 MeSH descriptor: [Nephrectomy] explode all trees 594 #8 (nephrectom* or lymphadenectom*):ti,ab 3676 #9 MeSH descriptor: [Radiotherapy] this term only 2824 #10 MeSH descriptor: [Lymphatic Irradiation] this term only 76 #11 MeSH descriptor: [Radiosurgery] this term only 485 #12 MeSH descriptor: [Radiotherapy, Adjuvant] this term only 1427 #13 MeSH descriptor: [Radiotherapy Dosage] this term only 2429 #14 MeSH descriptor: [Radiotherapy, High-Energy] this term only 320 #15 MeSH descriptor: [Re-Irradiation] this term only 37 #16 MeSH descriptor: [Cytoreduction Surgical Procedures] this term only 232 #17 MeSH descriptor: [Ablation Techniques] this term only 127 #18 MeSH descriptor: [Radiofrequency Ablation] this term only 342 #19 MeSH descriptor: [Robotic Surgical Procedures] this term only 716 #20 MeSH descriptor: [Minimally Invasive Surgical Procedures] this term only 1280 #21 MeSH descriptor: [Metastasectomy] this term only 43 #22 MeSH descriptor: [Lymph Node Excision] this term only 1540 #23 MeSH descriptor: [Watchful Waiting] this term only 469 #24 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) NEAR/3 (remov* or surg* or extract* or extirpat* or operat*)):ti,ab 18334 #25 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) NEAR/3 (surg* or remov* or partial* or procedur* or treat* or operat*)):ti,ab 63782 #26 (nephron* NEAR/2 (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)):ti,ab 123 #27 (radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or SABR):ti,ab 63947 #28 ((RAS or (robotic* NEAR/1 assist*)) NEAR/1 (surg* or remov* or partial* or procedur* or treat* or operat*)):ti,ab 256 #29 (minimal* NEAR/2 invas* NEAR/2 (surg* or procedur* or treat*)):ti,ab 3606 #30 ((inferior-vena-cava or IVC) NEAR/2 thrombectom*):ti,ab 2 #31 ((activ* or tumor* or tumour* or delay*) NEAR/2 (surveil* or monitor*)):ti,ab 4050 #32 (delay* NEAR/2 treat*):ti,ab 2913 #33 (watchful* NEAR/1 wait*):ti,ab 668 #34 {or #7-#33} 150254 #35 #6 AND #34 1693 #36 "conference":pt or (clinicaltrials or trialsearch):so 725938 #37 #35 NOT #36 776

Database name: Epistemonikos

Searches
(kidney* AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or

Searches
stage-4 or (stage 1) or (stage 2) or (stage 3) or (stage 4))) OR (collecting-duct* AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4 or (stage 1) or (stage 2) or (stage 3) or (stage 4))) OR ((collecting duct*) AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4 or (stage 1) or (stage 2) or (stage 3) or (stage 4))) OR (renal-cell* or (renal cell*) or rcc or ccrcc or renal-mass* or (renal mass*) or renal-tumor* or (renal tumor*) or renal-tumour* or (renal tumour*) or grawitz-tumor* or (grawitz tumor*) or grawitz-tumour* or (grawitz tumour*) or hypernephroma* or nephrocarcinoma*) OR (kidney* AND (transitional-cell* or (transitional cell*) or cell or urothelial* or duct or advanc*) AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma*)) AND (nephrectom* or lymphadenectom*) OR ((kidney* or renal* or rcc or ccrcc or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) AND (remov* or surg* or extract* or extirpat* or operat*)) OR ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) AND (surg* or remov* or partial* or procedur* or treat* or operat*)) OR (nephron* AND (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)) OR (radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or sabr) OR ((ras or (robotic* AND assist*)) AND (surg* or remov* or partial* or procedur* or treat* or operat*)) OR (minimal* AND invas* AND (surg* or procedur* or treat*)) OR ((inferior-vena-cava or ivc or (inferior vena cava)) AND thrombectom*) OR ((activ* or tumor* or tumour* or delay*) AND (surveil* or monitor*)) OR (delay* AND treat*) OR (watchful* AND wait*)

Database name: INAHTA

Searches
#1 "Kidney Neoplasms"[mhe] 111
#2 ((Kidney* AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or stage-4))) OR ((collecting-duct* AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4)) OR ((renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumor* or renal-tumour* or grawitz-tumor* or grawitz-tumour* or hypernephroma* or nephrocarcinoma*)) OR ((Kidney* AND (Transitional-cell* or cell or urothelial* or duct or advanc*) AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma*))) 105
#3 (((Kidney* AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or

Searches
stage-4))) OR ((collecting-duct* AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4)) OR ((renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumor* or renal-tumour* or grawitz-tumor* or grawitz-tumour* or hypernephroma* or nephrocarcinoma*)) OR ((Kidney* AND (Transitional-cell* or cell or urothelial* or duct or advanc*) AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma*)))) OR ("Kidney Neoplasms"[mhe]) 155
#4 "Nephrectomy"[mhe] 12
#5 ((nephrectom* or lymphadenectom*)) 31
#6 "Radiotherapy"[mh] 220
#7 "Lymphatic Irradiation"[mh] 0
#8 "Radiosurgery"[mh] 71
#9 "Radiotherapy Adjuvant"[mh] 27
#10 "Radiotherapy Dosage"[mh] 27
#11 "Radiotherapy High-Energy"[mh] 9
#12 "Re-Irradiation"[mh] 2
#13 "Cytoreduction Surgical Procedures"[mh] 2
#14 "Ablation Techniques"[mh] 35
#15 "Radiofrequency Ablation"[mh] 29
#16 "Robotic Surgical Procedures"[mh] 22
#17 "Minimally Invasive Surgical Procedures"[mh] 109
#18 "Metastasectomy"[mh] 1
#19 "Lymph Node Excision"[mh] 9
#20 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) AND (remov* or surg* or extract* or extirpat* or operat*)) 878
#21 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) AND (surg* or remov* or partial* or procedur* or treat* or operat*)) 756
#22 (nephron* AND (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)) 2
#23 radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or SABR) 1000
#24 ((RAS or (robotic* AND assist*)) AND (surg* or remov* or partial* or procedur* or treat* or operat*)) 73
#25 (minimal* AND invas* AND (surg* or procedur* or treat*))246
#26 ((inferior-vena-cava or IVC) AND thrombectom*) 0
#27 ((activ* or tumor* or tumour* or delay*) AND (surveil* or monitor*)) 318
#28 (delay* AND treat*) 201
#29 (watchful* AND wait*) 45

Searches		
#29	#28 OR #27 OR #26 OR #25 OR #24 OR #23 OR #22 OR #21 OR #20 OR #19 OR #18 OR #17 OR #16 OR #15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4	2796
#30	#29 AND #3	155
Limit	English language	97

Cost-effectiveness searches

Database results

Databases	Date searched	Database platform	Database segment or version	No. of results downloaded
EconLit	05/02/2024	OVID	1886 to January 25, 2024	1
EED	07/02/2024	CRD	n/a	23
Embase	05/02/2024	Ovid	1974 to 2024 February 02	65
HTA	07/02/2024	CRD	n/a	27
INAHTA	05/02/2024	INAHTA	n/a	155
MEDLINE ALL	05/02/2024	Ovid	1946 to February 02, 2024	62

Rerun search database results

Databases	Date searched	Database platform	Database segment or version	No. of results downloaded
EconLit	06/05/2025	OVID	1886 to May 01, 2025	1
Embase	06/05/2025	Ovid	1974 to 2025 May 05	73
INAHTA	06/05/2025	INAHTA	n/a	177
MEDLINE ALL	06/05/2025	Ovid	1946 to May 05, 2025	68

Search strategy history

Database name: Econlit

Searches
1 (Kidney* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or stage-4)).ti,ab. (8) 2 (collecting-duct* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4)).ti,ab. (0) 3 (renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumo?r* or grawitz-tumo?r* or hypernephroma* or nephrocarcinoma*).ti,ab. (22)

Searches
4 (Kidney* adj2 (Transitional-cell* or cell or urothelial* or duct or advanc*) adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma*)).ti,ab. (0)
5 or/1-4 (30)
6 (nephrectom* or lymphadenectom*).ti,ab,kw. (0)
7 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) adj3 (remov* or surg* or extract* or extirpat* or operat*)).ti,ab. (80)
8 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) adj3 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (25798)
9 (nephron* adj2 (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)).ti,ab. (0)
10 (radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or SABR).ti,ab,kw. (599)
11 ((RAS or (robotic* adj1 assist*)) adj1 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (10)
12 ((RAS or (robotic* adj1 assist*)) and (surg* or remov* or partial* or procedur* or treat* or operat*)).kw. (0)
13 (minimal* adj2 invas* adj2 (surg* or procedur* or treat*)).ti,ab. (7)
14 (minimal* and invas* and (surg* or procedur* or treat*)).kw. (0)
15 ((inferior-vena-cava or IVC) adj2 thrombectom*).ti,ab. (0)
16 ((inferior-vena-cava or IVC) and thrombectom*).kw. (0)
17 ((activ* or tumo?r* or delay*) adj2 (surveil* or monitor*)).ti,ab. (388)
18 ((activ* or tumo?r* or delay*) and (surveil* or monitor*)).kw. (4)
19 (delay* adj2 treat*).ti,ab. (48)
20 (delay* and treat*).kw. (0)
21 (watchful* adj1 wait*).ti,ab. (10)
22 (watchful* and wait*).kw. (0)
23 or/6-22 (26909)
24 5 and 23 (1)

Database name: CRD EED & HTA

Searches

Line	Search	Hits
1	MESH DESCRIPTOR Kidney Neoplasms EXPLODE ALL TREES	201
2	(Kidney* NEAR2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or stage-4))	194
3	(collecting-duct* NEAR2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4))	1
4	(renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumor* or renal-tumour* or grawitz-tumor* or grawitz-tumour* or hypernephroma* or nephrocarcinoma*)	204
5	(Kidney* NEAR2 (Transitional-cell* or cell or urothelial* or duct or advanc*) NEAR2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma*))	3
6	#1 OR #2 OR #3 OR #4 OR #5	262
7	MESH DESCRIPTOR Nephrectomy EXPLODE ALL TREES	95
8	(nephrectom* or lymphadenectom*)	235
9	MESH DESCRIPTOR Radiotherapy	247
10	MESH DESCRIPTOR Lymphatic Irradiation	1
11	MESH DESCRIPTOR Radiosurgery	125
12	MESH DESCRIPTOR Radiotherapy, Adjuvant	176
13	MESH DESCRIPTOR Radiotherapy Dosage	112
14	MESH DESCRIPTOR Radiotherapy, High-Energy	15
15	MESH DESCRIPTOR Re-Irradiation	0
16	MESH DESCRIPTOR Cytoreduction Surgical Procedures	4
17	MESH DESCRIPTOR Ablation Techniques	29
18	MESH DESCRIPTOR Radiofrequency Ablation	0
19	MESH DESCRIPTOR Robotic Surgical Procedures	23
20	MESH DESCRIPTOR Minimally Invasive Surgical Procedures	260
21	MESH DESCRIPTOR Metastasectomy	5
22	MESH DESCRIPTOR Lymph Node Excision	171
23	((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) NEAR3 (remov* or surg* or extract* or extirpat* or operat*))	2281
24	((laproscop* or open or partial* or radical or transperiton* or retroperiton*) NEAR3 (surg* or remov* or partial* or procedur* or treat* or operat*))	1045
25	(nephron* NEAR2 (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*))	9
26	(radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or SABR)	3151
27	((RAS or (robotic* NEAR1 assist*)) NEAR1 (surg* or remov* or partial* or procedur* or treat* or operat*))	28
28	(minimal* NEAR2 invas* NEAR2 (surg* or procedur* or treat*))	425
29	((inferior-vena-cava or IVC) NEAR2 thrombectom*)	0
30	((activ* or tumor* or tumour* or delay*) NEAR2 (surveil* or monitor*))	119
31	(delay* NEAR2 treat*)	119
32	MESH DESCRIPTOR Watchful Waiting	38
33	(watchful* NEAR1 wait*)	137
34	#7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33	6388
35	#6 AND #34	97
36	(#35) IN NHSEED	23
37	(#35) IN HTA	27

Database name: Embase

Searches
1 exp kidney tumor/ (169657) 2 (Kidney* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or stage-4)).ti,ab. (25905) 3 (collecting-duct* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4)).ti,ab. (739) 4 (renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumo?r* or grawitz-tumo?r* or hypernephroma* or nephrocarcinoma*).ti,ab. (105980) 5 (Kidney* adj2 (Transitional-cell* or cell or urothelial* or duct or advanc*) adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma*)).ti,ab. (1182) 6 or/1-5 (199645) 7 exp nephrectomy/ (79289) 8 (nephrectom* or lymphadenectom*).ti,ab,kw. (96024) 9 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) adj3 (remov* or surg* or extract* or extirpat* or operat*)).ti,ab. (296981) 10 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) and (remov* or surg* or extract* or extirpat* or operat*)).kf. (84341) 11 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) adj3 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (1174471) 12 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) and (surg* or remov* or partial* or procedur* or treat* or operat*)).kf. (39794) 13 (nephron* adj2 (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)).ti,ab. (4849) 14 (nephron* and (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)).kf. (927) 15 radiotherapy/ or cancer radiotherapy/ or adjuvant radiotherapy/ or exp radiosurgery/ or radiotherapy dosage/ or megavoltage radiotherapy/ or re-irradiation/ or cytoreductive surgery/ or ablation therapy/ or radiofrequency ablation/ or robot assisted surgery/ or minimally invasive surgery/ or metastasis resection/ or lymph node dissection/ or cryotherapy/ or stereotactic body radiation therapy/ or active surveillance/ or watchful waiting/ (702412) 16 (radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or SABR).ti,ab,kw. (1248256) 17 ((RAS or (robotic* adj1 assist*)) adj1 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (3873) 18 ((RAS or (robotic* adj1 assist*)) and (surg* or remov* or partial* or procedur* or treat* or operat*)).kw. (21) 19 (minimal* adj2 invas* adj2 (surg* or procedur* or treat*)).ti,ab. (58898) 20 (minimal* and invas* and (surg* or procedur* or treat*)).kw. (8) 21 ((inferior-vena-cava or IVC) adj2 thrombectom*).ti,ab. (647) 22 ((inferior-vena-cava or IVC) and thrombectom*).kw. (36)

Searches
23 ((activ* or tumo?r* or delay*) adj2 (surveil* or monitor*)).ti,ab. (57069) 24 ((activ* or tumo?r* or delay*) and (surveil* or monitor*)).kw. (432) 25 (delay* adj2 treat*).ti,ab. (32723) 26 (delay* and treat*).kw. (281) 27 (watchful* adj1 wait*).ti,ab. (4971) 28 (watchful* and wait*).kw. (8) 29 or/7-28 (3014855) 30 6 and 29 (72543) 31 nonhuman/ not human/ (5377221) 32 30 not 31 (70709) 33 limit 32 to english language (63258) 34 33 not (letter or editorial).pt. (61164) 35 34 not (conference abstract* or conference review or conference paper or conference proceeding).db,pt,su. (41542) 36 afghanistan/ or africa/ or "africa south of the sahara"/ or albania/ or algeria/ or andorra/ or angola/ or argentina/ or "antigua and barbuda"/ or armenia/ or exp azerbaijan/ or bahamas/ or bahrain/ or bangladesh/ or barbados/ or belarus/ or belize/ or benin/ or bhutan/ or bolivia/ or borneo/ or exp "bosnia and herzegovina"/ or botswana/ or exp brazil/ or brunei darussalam/ or bulgaria/ or burkina faso/ or burundi/ or cambodia/ or cameroon/ or cape verde/ or central africa/ or central african republic/ or chad/ or exp china/ or comoros/ or congo/ or cook islands/ or cote d'ivoire/ or croatia/ or cuba/ or cyprus/ or democratic republic congo/ or djibouti/ or dominica/ or dominican republic/ or ecuador/ or el salvador/ or egypt/ or equatorial guinea/ or eritrea/ or eswatini/ or ethiopia/ or exp "federated states of micronesia"/ or fiji/ or gabon/ or gambia/ or exp "georgia (republic)"/ or ghana/ or grenada/ or guatemala/ or guinea/ or guinea-bissau/ or guyana/ or haiti/ or honduras/ or exp india/ or exp indonesia/ or iran/ or exp iraq/ or jamaica/ or jordan/ or kazakhstan/ or kenya/ or kiribati/ or kosovo/ or kuwait/ or kyrgyzstan/ or laos/ or lebanon/ or liechtenstein/ or lesotho/ or liberia/ or libyan arab jamahiriya/ or madagascar/ or malawi/ or exp malaysia/ or maldives/ or mali/ or malta/ or mauritania/ or mauritius/ or melanesia/ or moldova/ or monaco/ or mongolia/ or "montenegro (republic)"/ or morocco/ or mozambique/ or myanmar/ or namibia/ or nauru/ or nepal/ or nicaragua/ or niger/ or nigeria/ or niue/ or north africa/ or oman/ or exp pakistan/ or palau/ or palestine/ or panama/ or papua new guinea/ or paraguay/ or peru/ or philippines/ or polynesia/ or qatar/ or "republic of north macedonia"/ or romania/ or exp russian federation/ or rwanda/ or sahel/ or "saint kitts and nevis"/ or "saint lucia"/ or "saint vincent and the grenadines"/ or saudi arabia/ or senegal/ or exp serbia/ or seychelles/ or sierra leone/ or singapore/ or "sao tome and principe"/ or solomon islands/ or exp somalia/ or south africa/ or south asia/ or south sudan/ or exp southeast asia/ or sri lanka/ or sudan/ or suriname/ or syrian arab republic/ or taiwan/ or tajikistan/ or tanzania/ or thailand/ or timor-leste/ or togo/ or tonga/ or "trinidad and tobago"/ or tunisia/ or turkmenistan/ or tuvalu/ or uganda/ or exp ukraine/ or exp united arab emirates/ or uruguay/ or exp uzbekistan/ or vanuatu/ or venezuela/ or viet nam/ or western sahara/ or yemen/ or zambia/ or zimbabwe/ (1740991) 37 exp "organisation for economic co-operation and development"/ (2851) 38 exp australia/ or "australia and new zealand"/ or austria/ or baltic states/ or exp belgium/ or exp canada/ or chile/ or colombia/ or costa rica/ or czech republic/ or denmark/ or estonia/ or europe/ or exp finland/ or exp france/ or exp germany/ or greece/ or hungary/ or iceland/ or ireland/ or israel/ or exp italy/ or japan/ or korea/ or latvia/ or lithuania/ or luxembourg/ or exp mexico/ or netherlands/ or new zealand/ or north america/ or exp norway/ or poland/ or exp portugal/ or scandinavia/ or sweden/ or slovakia/ or slovenia/ or south korea/ or exp spain/ or switzerland/ or "Turkey (republic)"/ or exp united kingdom/ or exp united states/ or western europe/ (3835523)

Searches
39 european union/ (31807) 40 developed country/ (35992) 41 or/37-40 (3869712) 42 36 not 41 (1584824) 43 35 not 42 (41050) 44 cost utility analysis/ (12696) 45 (cost* and ((qualit* adj2 adjust* adj2 life*) or qaly*)).tw. (30947) 46 ((incremental* adj2 cost*) or ICER).tw. (31650) 47 (cost adj2 utilit*).tw. (11338) 48 (cost* and ((net adj benefit*) or (net adj monetary adj benefit*) or (net adj health adj benefit*))).tw. (3393) 49 ((cost adj2 (effect* or utilit*)) and (quality adj of adj life)).tw. (37671) 50 (cost and (effect* or utilit*)).ti. (58589) 51 or/44-50 (92726) 52 43 and 51 (65)

Database name: Medline ALL

Searches
1 exp Kidney Neoplasms/ (85968) 2 (Kidney* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or stage-4)).ti,ab. (17223) 3 (collecting-duct* adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4)).ti,ab. (491) 4 (renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumo?r* or grawitz-tumo?r* or hypernephroma* or nephrocarcinoma*).ti,ab. (70816) 5 (Kidney* adj2 (Transitional-cell* or cell or urothelial* or duct or advanc*) adj2 (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma*)).ti,ab. (817) 6 or/1-5 (118910) 7 exp nephrectomy/ (37965) 8 (nephrectom* or lymphadenectom*).ti,ab,kw. (62344) 9 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) adj3 (remov* or surg* or extract* or extirpat* or operat*)).ti,ab. (205263) 10 ((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) and (remov* or surg* or extract* or extirpat* or operat*)).kf. (60200) 11 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) adj3 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (920508) 12 ((laproscop* or open or partial* or radical or transperiton* or retroperiton*) and (surg* or remov* or partial* or procedur* or treat* or operat*)).kf. (22001) 13 (nephron* adj2 (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)).ti,ab. (2662)

Searches
14 (nephron* and (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)).kf. (447) 15 radiotherapy/ or lymphatic irradiation/ or radiosurgery/ or radiotherapy, adjuvant/ or radiotherapy dosage/ or radiotherapy, high-energy/ or re-irradiation/ or Cytoreduction Surgical Procedures/ or Ablation Techniques/ or Radiofrequency Ablation/ or Robotic Surgical Procedures/ or Minimally Invasive Surgical Procedures/ or Metastasectomy/ or Lymph Node Excision/ or Watchful Waiting/ (240052) 16 (radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or SABR).ti,ab,kw. (936452) 17 ((RAS or (robotic* adj1 assist*)) adj1 (surg* or remov* or partial* or procedur* or treat* or operat*)).ti,ab. (2212) 18 ((RAS or (robotic* adj1 assist*)) and (surg* or remov* or partial* or procedur* or treat* or operat*)).kw. (11) 19 (minimal* adj2 invas* adj2 (surg* or procedur* or treat*)).ti,ab. (38673) 20 (minimal* and invas* and (surg* or procedur* or treat*)).kw. (5) 21 ((inferior-vena-cava or IVC) adj2 thrombectom*).ti,ab. (279) 22 ((inferior-vena-cava or IVC) and thrombectom*).kw. (26) 23 ((activ* or tumo?r* or delay*) adj2 (surveil* or monitor*)).ti,ab. (38554) 24 ((activ* or tumo?r* or delay*) and (surveil* or monitor*)).kw. (268) 25 (delay* adj2 treat*).ti,ab. (20957) 26 (delay* and treat*).kw. (163) 27 (watchful* adj1 wait*).ti,ab. (3243) 28 (watchful* and wait*).kw. (4) 29 or/7-28 (2207356) 30 6 and 29 (38664) 31 animals/ not humans/ (5159676) 32 30 not 31 (36990) 33 limit 32 to english language (30881) 34 limit 33 to (letter or historical article or comment or editorial or news or case reports) (9092) 35 33 not 34 (21789) 36 afghanistan/ or africa/ or africa, northern/ or africa, central/ or africa, eastern/ or "africa south of the sahara"/ or africa, southern/ or africa, western/ or albania/ or algeria/ or andorra/ or angola/ or "antigua and barbuda"/ or argentina/ or armenia/ or azerbaijan/ or bahamas/ or bahrain/ or bangladesh/ or barbados/ or belize/ or benin/ or bhutan/ or bolivia/ or borneo/ or "bosnia and herzegovina"/ or botswana/ or brazil/ or brunei/ or bulgaria/ or burkina faso/ or burundi/ or cabo verde/ or cambodia/ or cameroon/ or central african republic/ or chad/ or exp china/ or comoros/ or congo/ or cote d'ivoire/ or croatia/ or cuba/ or "democratic republic of the congo"/ or cyprus/ or djibouti/ or dominica/ or dominican republic/ or ecuador/ or egypt/ or el salvador/ or equatorial guinea/ or eritrea/ or eswatini/ or ethiopia/ or fiji/ or gabon/ or gambia/ or "georgia (republic)"/ or ghana/ or grenada/ or guatemala/ or guinea/ or guinea-bissau/ or guyana/ or haiti/ or honduras/ or independent state of samoa/ or exp india/ or indian ocean islands/ or indochina/ or indonesia/ or iran/ or iraq/ or jamaica/ or jordan/ or kazakhstan/ or kenya/ or kosovo/ or kuwait/ or kyrgyzstan/ or laos/ or lebanon/ or liechtenstein/ or lesotho/ or liberia/ or libya/ or madagascar/ or malaysia/ or malawi/ or mali/ or malta/ or mauritania/ or mauritius/ or mekong valley/ or melanesia/ or micronesia/ or monaco/ or mongolia/ or montenegro/ or morocco/ or mozambique/ or myanmar/ or namibia/ or nepal/ or nicaragua/ or niger/ or nigeria/ or oman/ or pakistan/ or palau/ or exp panama/ or papua new guinea/ or paraguay/ or peru/ or philippines/ or qatar/ or "republic of belarus"/ or "republic of north macedonia"/ or romania/ or exp russia/ or rwanda/ or "saint kitts and nevis"/ or saint lucia/ or "saint vincent and the grenadines"/ or

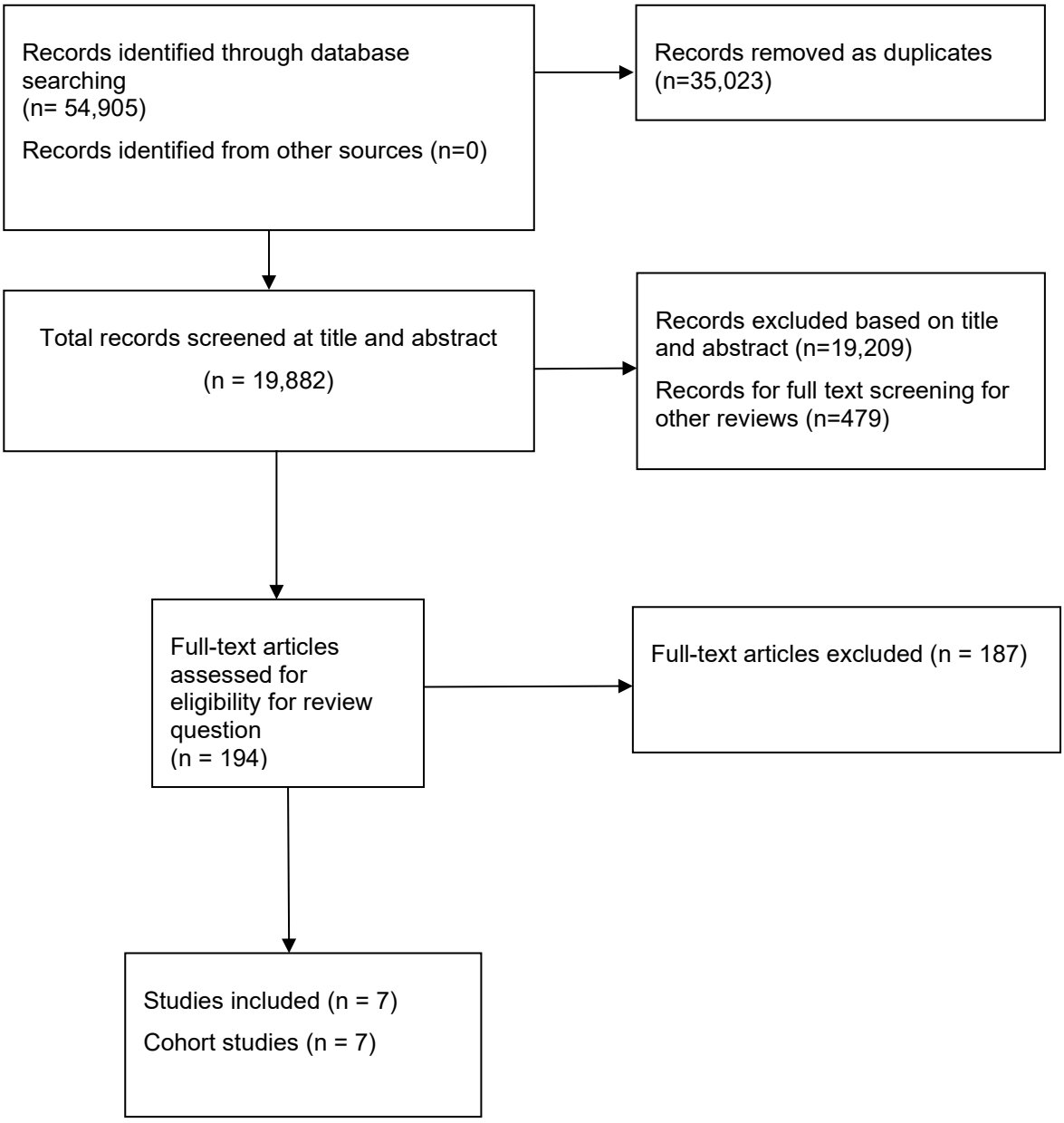
Searches
"sao tome and principe"/ or saudi arabia/ or serbia/ or sierra leone/ or senegal/ or seychelles/ or singapore/ or somalia/ or south africa/ or south sudan/ or sri lanka/ or sudan/ or suriname/ or syria/ or taiwan/ or tajikistan/ or tanzania/ or thailand/ or timor-leste/ or togo/ or tonga/ or "trinidad and tobago"/ or tunisia/ or turkmenistan/ or uganda/ or ukraine/ or united arab emirates/ or uruguay/ or uzbekistan/ or vanuatu/ or venezuela/ or vietnam/ or west indies/ or yemen/ or zambia/ or zimbabwe/ (1325188) 37 "organisation for economic co-operation and development"/ (587) 38 australasia/ or exp australia/ or austria/ or baltic states/ or belgium/ or exp canada/ or chile/ or colombia/ or costa rica/ or czech republic/ or exp denmark/ or estonia/ or europe/ or finland/ or exp france/ or exp germany/ or greece/ or hungary/ or iceland/ or ireland/ or israel/ or exp italy/ or exp japan/ or korea/ or latvia/ or lithuania/ or luxembourg/ or mexico/ or netherlands/ or new zealand/ or north america/ or exp norway/ or poland/ or portugal/ or exp "republic of korea"/ or "scandinavian and nordic countries"/ or slovakia/ or slovenia/ or spain/ or sweden/ or switzerland/ or turkey/ or exp united kingdom/ or exp united states/ (3530229) 39 european union/ (17894) 40 developed countries/ (21491) 41 or/37-40 (3546443) 42 36 not 41 (1234802) 43 35 not 42 (21490) 44 Cost-Benefit Analysis/ (93959) 45 (cost* and ((qualit* adj2 adjust* adj2 life*) or qaly*)).tw. (18159) 46 ((incremental* adj2 cost*) or ICER).tw. (18654) 47 (cost adj2 utilit*).tw. (7142) 48 (cost* and ((net adj benefit*) or (net adj monetary adj benefit*) or (net adj health adj benefit*))).tw. (2429) 49 ((cost adj2 (effect* or utilit*)) and (quality adj of adj life)).tw. (24749) 50 (cost and (effect* or utilit*)).ti. (39941) 51 or/44-50 (116479) 52 43 and 51 (62)

Database name: INAHTA

Searches
#1 "Kidney Neoplasms"[mhe] 111
#2 ((Kidney* AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumo?r* or mass or metastat* or malignan* or sarcoma* or parenchyma* or t1 or t1a or t1b or tb or t2a or t2b or t3 or t3a or t3b or t3c or stage-1 or stage-2 or stage-3 or stage-4))) OR ((collecting-duct* AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma* or stage-4)) OR ((renal-cell* or RCC or ccRCC or Renal-mass* or renal-tumor* or renal-tumour* or grawitz-tumor* or grawitz-tumour* or hypernephroma* or nephrocarcinoma*)) OR ((Kidney* AND (Transitional-cell* or cell or urothelial* or duct or advanc*) AND (cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or parenchyma*))) 105
#3 #1 or #2 155
#4 "Nephrectomy"[mhe] 12
#5 ((nephrectom* or lymphadenectom*)) 31

Searches	
#6	"Radiotherapy"[mh] 220
#7	"Lymphatic Irradiation"[mh] 0
#8	"Radiosurgery"[mh] 71
#9	"Radiotherapy Adjuvant"[mh] 27
#10	"Radiotherapy Dosage"[mh] 27
#11	"Radiotherapy High-Energy"[mh] 9
#12	"Re-Irradiation"[mh] 2
#13	"Cytoreduction Surgical Procedures"[mh] 2
#14	"Ablation Techniques"[mh] 35
#15	"Radiofrequency Ablation"[mh] 29
#16	"Robotic Surgical Procedures"[mh] 22
#17	"Minimally Invasive Surgical Procedures"[mh] 109
#18	"Metastasectomy"[mh] 1
#19	"Lymph Node Excision"[mh] 9
#20	((kidney* or renal* or RCC or ccRCC or lymph* or adrenal* or cancer* or carcinoma* or carcinosarcoma* or adenocarcino* or neoplas* or tumor* or tumour* or mass or metastat* or malignan* or sarcoma* or hypernephroma* or nephrocarcinoma*) AND (remov* or surg* or extract* or extirpat* or operat*)) 878
#21	((laproscop* or open or partial* or radical or transperiton* or retroperiton*) AND (surg* or remov* or partial* or procedur* or treat* or operat*)) 756
#22	(nephron* AND (surg* or remov* or partial* or procedur* or treat* or operat* or spar* or preserv*)) 2
#23	radiotherap* or radiation* or radiosurg* or cyberknife* or irradiat* or thermoablat* or ablat* or cyrotherap* or cytoreduct* or cyroablat* or stereostat* or SABR) 1000
#24	((RAS or (robotic* AND assist*)) AND (surg* or remov* or partial* or procedur* or treat* or operat*)) 73
#25	(minimal* AND invas* AND (surg* or procedur* or treat*))246
#26	((inferior-vena-cava or IVC) AND thrombectom*) 0
#27	((activ* or tumor* or tumour* or delay*) AND (surveil* or monitor*)) 318
#28	(delay* AND treat*) 201
#29	(watchful* AND wait*) 45
#30	"Watchful Waiting"[mh] 17
#31	#30 OR #29 OR #28 OR #27 OR #26 OR #25 OR #24 OR #23 OR #22 OR #21 OR #20 OR #19 OR #18 OR #17 OR #16 OR #15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 2803
#32	#31 AND #3 155

Appendix C – Effectiveness evidence study selection



Appendix D – Effectiveness evidence

Bensalah, 2009

Bibliographic Reference	Bensalah, Karim; Salomon, Laurent; Lang, Herve; Zini, Laurent; Jacqmin, Didier; Manunta, Andrea; Crepel, Maxime; Ficarra, Vincenzo; Cindolo, Luca; de La Taille, Alexandre; Karakiewicz, Pierre; Patard, Jean-Jacques; Survival of patients with nonmetastatic pT3 renal tumours: a matched comparison of laparoscopic vs open radical nephrectomy.; BJU international; 2009; vol. 104 (no. 11); 1714-7

Study details

Study type	Retrospective cohort study
Study location	Italy
Study setting	Hospital setting
Study dates	1984 and 2004
Sources of funding	No conflicts of interest were declared
Inclusion criteria	Patients with pT3N0/NxM0 tumours and no inferior vena cava invasion Patients with pT3b with tumoral thrombus invading the renal vein but not the vena cava Patients with pT3a tumours with perirenal fat invasion
Exclusion criteria	Not reported
Intervention(s)	Laparoscopic radical nephrectomy (LRN)
Comparator	Open radical nephrectomy (ORN)
Outcome measures	Overall survival
Number of participants	Total number of participants: 179 LRN: 44 ORN: 135
Duration of follow-up	28 months and 55 months for laparoscopic radical nephrectomy and open radical nephrectomy, respectively.

Loss to follow-up	Not reported
Methods of analysis	Each patient treated by LRN was matched with up to four patients treated with ORN. Exact matches were made for age, gender, tumour size, Fuhrman grade, perirenal fat invasion, renal vein invasion and histological subtype. Estimates of the cumulative survival distributions were calculated according to the Kaplan-Meier method and log-rank tests were used to compare the differences between groups. A Cox proportional hazard regression model was used to test the independent effects of clinical and pathological variables on survival.

Study arms

Laparoscopic radical nephrectomy (N = 44)

Open radical nephrectomy (N = 135)

Characteristics

Arm-level characteristics

Characteristic	Laparoscopic radical nephrectomy (N = 44)	Open radical nephrectomy (N = 135)
% Female No of events	n = 16 ; % = 36.4	n = 49 ; % = 36.3
Mean age (SD) Mean (SD)	65 (13)	63 (11)
Tumour size (cm) Mean (SD)	5.1 (2)	5.3 (1.8)
Histological subtype: Clear cell No of events	n = 37 ; % = 84	n = 122 ; % = 90.4
Histological subtype: Papillary No of events	n = 4 ; % = 9	n = 6 ; % = 4.4

Characteristic	Laparoscopic radical nephrectomy (N = 44)	Open radical nephrectomy (N = 135)
Histological subtype: other No of events	n = 3 ; % = 7	n = 7 ; % = 5.2

Outcomes

Survival

Outcome	Laparoscopic radical nephrectomy vs Open radical nephrectomy, N2 = 45, N1 = 135
Survival Hazard ratio/95% CI	1.3 (0.38 to 4.3)

Survival - Polarity - Lower values are better

Critical appraisal - GDT Crit App - ROBINS-I: a tool for non-randomised studies of interventions

All outcomes

Section	Question	Answer
Overall bias	Risk of bias judgement	Serious *(The study has a serious risk of bias due to confounding, as the study did not control the analysis for all the important confounding domains.)*
Overall bias	Directness	Directly applicable *(The study was conducted in Italy, which has a different healthcare system than the UK NHS. However, the interventions (open radical nephrectomy and laparoscopic radical nephrectomy) and the patient population (pT3) are relevant to the UK NHS setting. The outcome assessed in the study, such as survival is important for decision-making in the UK NHS context.)*

Bragayrac, 2016

Bibliographic Reference	Bragayrac, Luciano A Nunez; Abbotoy, Daniel; Attwood, Kristopher; Darwiche, Fadi; Hoffmeyer, Jan; Kauffman, Eric C; Schwaab, Thomas; Outcomes of Minimal Invasive vs Open Radical Nephrectomy for the Treatment of Locally Advanced Renal-Cell Carcinoma.; Journal of endourology; 2016; vol. 30 (no. 8); 871-6

Study details

Study type	Retrospective cohort study
Study location	US
Study setting	Hospital setting
Study dates	From 1998 to 2015
Sources of funding	No competing financial interests exist.
Inclusion criteria	Patients with pT3 and pT4 RCC Patients who underwent radical nephrectomy
Exclusion criteria	Patients who underwent partial nephrectomy and nephroureterectomy
Intervention(s)	Open radical nephrectomy
Comparator	Minimally invasive surgery, defined as radical nephrectomy only and performed with robotic and laparoscopic
Outcome measures	Overall survival Length of hospital stay Complications Local recurrence-free survival Metastases-free survival
Number of participants	Total number of participants: 172 Open radical nephrectomy: 105 Minimally invasive surgery: 67

Duration of follow-up	Median follow-up for all patients was 32.8 months. Median follow-up was 30.1 months and 48.2 months for open radical nephrectomy and minimally invasive surgery, respectively
Loss to follow-up	Not reported
Methods of analysis	The time-to-event outcomes were summarised by cohort using standard Kaplan– Meier methods, with estimates of the median and 1/3-year rate survival obtained with 95% confidence intervals. Comparisons were made using the log-rank test. OS was defined as the time from surgery until death (event) or last follow-up (censored).

Study arms

Open nephrectomy (N = 105)

Minimally invasive surgery (N = 67)

Characteristics

Arm-level characteristics

Characteristic	Open nephrectomy (N = 105)	Minimally invasive surgery (N = 67)
% Female No of events	n = 32 ; % = 30.5	n = 30 ; % = 44.8
Mean age (SD) Mean (SD)	62.71 (NR)	64.9 (NR)
Histological subtype: Clear cell No of events	n = 81 ; % = 77.1	n = 59 ; % = 88.1
Histological subtype: other No of events	n = 24 ; % = 22.9	n = 8 ; % = 11.9
TNM stage: pT3a No of events	n = 73 ; % = 69.5	n = 53 ; % = 79.1

Characteristic	Open nephrectomy (N = 105)	Minimally invasive surgery (N = 67)
TNM stage: pT3b/c No of events	n = 24 ; % = 22.9	n = 10 ; % = 14.9
TNM stage: pT4 No of events	n = 8 ; % = 7.6	n = 4 ; % = 6

Outcomes

Survival

Outcome	Minimally invasive surgery vs Open nephrectomy, N2 = 67, N1 = 105
Overall survival Hazard ratio/95% CI	1.17 (0.52 to 2.63)
Local recurrence Hazard ratio/95% CI	0.66 (0.03 to 13.99)
Distant metastasis Hazard ratio/95% CI	0.45 (0.16 to 1.28)

Overall survival - Polarity - Lower values are better
local recurrence - Polarity - Lower values are better
Distant metastasis - Polarity - Lower values are better

LOS

Outcome	Open nephrectomy, N = 105	Minimally invasive surgery, N = 67
LOS Mean (SD)	5.67 (NR)	3.55 (NR)
LOS **Median (IQR)**	4 (NR)	2 (NR)

LOS - Polarity - Lower values are better

Complications

Outcome	Open nephrectomy, N = 105	Minimally invasive surgery, N = 67
CD I/II No of events	n = 28 ; % = 71.8	n = 10 ; % = 62.5
CD III/IV/V No of events	n = 11 ; % = 28.2	n = 6 ; % = 37.5

Complications - Polarity - Lower values are better

Critical appraisal - GDT Crit App - ROBINS-I: a tool for non-randomised studies of interventions

All outcomes

Section	Question	Answer
Overall bias	Risk of bias judgement	Serious *(The study did not use any method to control for potential confounders and adjust the results. Furthermore, the authors carried out a multivariable analysis of time-to-event outcomes (OS, local and metastasis recurrence-free survival), however, there is no information on how this analysis was carried out (which covariates were included in the multivariable analysis.)*
Overall bias	Directness	Directly applicable *(The study was conducted in the US, which has a different healthcare system than the UK NHS. However, the interventions (open radical nephrectomy and minimally invasive surgery (laparoscopic and robotic)) and the patient population (pT3 and pT4) are relevant to the UK NHS setting. The outcomes assessed in the study, such as LOS, complications, OS, and recurrence-free survival are important for decision-making in the UK NHS context.)*

Gershman, 2017

Bibliographic Reference	Gershman, Boris; Moreira, Daniel M; Thompson, R Houston; Boorjian, Stephen A; Lohse, Christine M; Costello, Brian A;

Cheville, John C; Leibovich, Bradley C; Renal Cell Carcinoma with Isolated Lymph Node Involvement: Long-term Natural History and Predictors of Oncologic Outcomes Following Surgical Resection.; European urology; 2017; vol. 72 (no. 2); 300-306

Study details

Study type	Retrospective cohort study
Study location	US
Study setting	Hospital setting
Study dates	From 1980 to 2010
Sources of funding	None
Inclusion criteria	Patients with pN1M0 RCC All participants had lymph node removed
Exclusion criteria	Not reported
Intervention(s)	Laparoscopic radical nephrectomy (LRP)
Comparator	Open radical nephrectomy (ORP) Open partial nephrectomy (OPR)
Outcome measures	Overall survival Cancer-specific mortality Distant metastases
Number of participants	Total number of participants: 138 ORP: 132 LRP: 5 OPR: 1
Duration of follow-up	Median follow-up among survivors was 8.5 years (IQR 5.6– 10.9)
Loss to follow-up	Not reported

Methods of analysis	Distant metastases–free survival (MFS), cancer-specific survival (CSS), and overall survival (OS) were estimated using the Kaplan-Meier method for the overall cohort and among patients who underwent extended LND, defined as removal of ≥13 LNs. Associations of clinicopathologic features with the development of distant metastases, cancer-specific mortality (CSM), and all-cause mortality (ACM) were evaluated using Cox proportional hazards regression models and summarized using a hazard ratio (HR) and 95% confidence interval (CI). Multivariable models were constructed using forward stepwise selection with p = 0.05 set as the cutoff for a feature to enter or leave the model.

Study arms

Open (N = 133)

Laparoscopic (N = 5)

Characteristics

Study-level characteristics

Characteristic	**Study (N = 138)**
% Female No of events	n = 47 ; % = 34
Mean age (SD) Median (IQR)	63 (54 to 72)
Tumor size (cm) Median (IQR)	10 (8 to 13)
Histological subtype: Clear cell No of events	n = 105 ; % = 76
Histological subtype: Papillary No of events	n = 15 ; % = 11
Histological subtype: Chromophobe No of events	n = 5 ; % = 4

Characteristic	Study (N = 138)
Histological subtype: collecting duct No of events	n = 4 ; % = 3
Histological subtype: clear cell papillary No of events	n = 1 ; % = 1
Histological subtype: no otherwise specified No of events	n = 8 ; % = 6
TNM stage: pT1a No of events	n = 3 ; % = 2
TNM stage: pT1b No of events	n = 10 ; % = 7
TNM stage: pT2a No of events	n = 11 ; % = 8
TNM stage: pT2b No of events	n = 7 ; % = 5
TNM stage: pT3a No of events	n = 62 ; % = 45
TNM stage: pT3b No of events	n = 31 ; % = 23
TNM stage: pT3c No of events	n = 2 ; % = 1
TNM stage: pT4 No of events	n = 11 ; % = 8

Outcomes

Survival

Outcome	Laparoscopic vs Open, , N2 = 5, N1 = 133
Distant metastases Hazard ratio/95% CI	1.25 (0.51 to 3.08)
Overall survival Hazard ratio/95% CI	0.77 (0.28 to 2.08)
Cancer-specific mortality Hazard ratio/95% CI	0.99 (0.31 to 3.13)

Distant metastases - Polarity - Lower values are better
Cancer-specific mortality - Polarity - Lower values are better
Overall survival - Polarity - Lower values are better

Critical appraisal - GDT Crit App - ROBINS-I: a tool for non-randomised studies of interventions

All outcomes

Section	Question	Answer
Overall bias	Risk of bias judgement	Serious *(The study described that a multivariable model was constructed but does not describe how and which confounders were used to adjust the analysis.)*
Overall bias	Directness	Directly applicable *(The study was conducted in the US, which has a different healthcare system than the UK NHS. However, the interventions (open radical and partial nephrectomy and robot-assisted radical nephrectomy) and the patient population (patients with pN1M0) are relevant to the UK NHS setting. The outcome assessed in the study, such as survival is important for decision-making in the UK NHS context.)*

Laird, 2015

Bibliographic Reference	Laird, A; Choy, K C C; Delaney, H; Cutress, M L; O'Connor, K M; Tolley, D A; McNeill, S A; Stewart, G D; Riddick, A C P; Matched pair analysis of laparoscopic versus open radical nephrectomy for the treatment of T3 renal cell carcinoma.; World journal of urology; 2015; vol. 33 (no. 1); 25-32

Study details

Study type	Prospective cohort study
Study location	Western General Hospital, Edinburgh - UK. Data obtained from institutional databases.
Study setting	Hospital setting
Study dates	2000 to 2011
Sources of funding	The authors declare that they have no conflict of interest, and no funding was received for this study.
Inclusion criteria	Patients with pT3 tumours
Exclusion criteria	When key data required for pair matching were missing from hospital records Patients undergoing nephrectomy outside the study period Patients undergoing partial nephrectomy Patients undergoing laparoscopic-assisted open nephrectomy or nephrectomy with inferior vena cava exploration
Intervention(s)	Laparoscopic radical nephrectomy (LRN)
Comparator	Open radical nephrectomy (ORN)
Outcome measures	Complications Length of stay
Number of participants	N: 50 LRN: 25 ORN: 25

Duration of follow-up	Follow-up took place at 3 and 6 months post-operatively then 6-month intervals for 2 years and subsequently on an annual basis up to 5 years post-operation. Median follow-up of censored patients (i.e. those that were known to be alive at the last clinical contact) was 4.6 years (54.6 months) for the LRN group and 4.8 years (57.6 months) for the ORN.
Loss to follow-up	Not reported.
Methods of analysis	Continuous variables were compared using the Mann–Whitney U test and categorical variables using the Pearson chi-squared test, with continuity correction where indicated. OS was estimated using the Kaplan– Meier method, and survival distributions were compared using the Mantel–Cox (Log Rank) test.

Study arms

LRN (N = 25)

ORN (N = 25)

Characteristics

Arm-level characteristics

Characteristic	LRN (N = 25)	ORN (N = 25)
% Female No of events	n = 9 ; % = 36	n = 9 ; % = 36
Mean age (SD) Median (IQR)	66.7 (60.6 to 73.2)	65.6 (58 to 74.8)
TNM stage: pT3a No of events	n = 8 ; % = 32	n = 8 ; % = 32
TNM stage: pT3b No of events	n = 17 ; % = 68	n = 17 ; % = 68

Outcomes

LOS

Outcome	LRN (N = 25)	ORN (N = 25)
LOS **Median (IQR)**	4 (4-7)	9 (7-10)

LOS - Polarity - Lower values are better

Complications

Outcome	LRN, , N = 25	ORN, , N = 25
Clavien-Dindo I No of events	n = 3 ; % = 12	n = 4 ; % = 16
Clavien-Dindo II No of events	n = 4 ; % = 16	n = 7 ; % = 28
Clavien-Dindo IIIa No of events	n = 0 ; % = 0	n = 1 ; % = 4
Clavien-Dindo IIIb No of events	n = 0 ; % = 0	n = 0 ; % = 0
Clavien-Dindo IVa No of events	n = 0 ; % = 0	n = 0 ; % = 0
Clavien-Dindo IVb No of events	n = 0 ; % = 0	n = 1 ; % = 4
Clavien-Dindo V No of events	n = 0 ; % = 0	n = 0 ; % = 0

Complications - Polarity - Lower values are better

Critical appraisal - GDT Crit App - ROBINS-I: a tool for non-randomised studies of interventions

All outcomes

Section	Question	Answer
Overall bias	Risk of bias judgement	Serious *(The study has a serious risk of bias due to confounding, as the study did not control the analysis for all the important confounding domains.)*
Overall bias	Directness	Directly applicable *(The study was conducted in the UK NHS. The interventions (laparoscopic and open radical nephrectomy) and the patient population (pT3) are relevant to the UK NHS setting. The outcome assessed in the study, such as complications is important for decision-making in the UK NHS context.*

Patel, 2017

Bibliographic Reference	Patel, Premal; Nayak, Jasmir G; Liu, Zhihui; Saarela, Olli; Jewett, Michael; Rendon, Ricardo; Kapoor, Anil; Black, Peter; Tanguay, Simon; Kawakami, Jun; Moore, Ronald; Breau, Rodney H; Morash, Chris; Pouliot, Frederic; Drachenberg, Darrel E; A Multicentered, Propensity Matched Analysis Comparing Laparoscopic and Open Surgery for pT3a Renal Cell Carcinoma.; Journal of endourology; 2017; vol. 31 (no. 7); 645-650

Study details

Study type	Retrospective cohort study
Study location	Canada
Study setting	Hospital setting
Study dates	From 2008 to 2015
Sources of funding	No competing financial interests exist.
Inclusion criteria	Patients with pT3a RCC
Exclusion criteria	Patients with metastatic disease at the time of surgery

Intervention(s)	Laparoscopic renal surgery (LRS), including both laparoscopic radical nephrectomy and laparoscopic partial nephrectomy
Comparator	Open renal surgery (ORS), including both open radical nephrectomy and open partial nephrectomy
Outcome measures	Recurrence-free survival
Number of participants	Total number of participants: 452 LRS: 226 ORS: 226
Duration of follow-up	Median time to recurrence in the overall cohort was 4.1 years in the LRS group and not reached in the ORS group. In the radical nephrectomy group, the median time to recurrence was 3.9 years and 2.1 years for LRS and ORS, respectively. The median time to recurrence was not reached in participants who underwent partial nephrectomy.
Loss to follow-up	Not reported
Methods of analysis	Propensity matching was chosen as it permits the comparison of outcomes in patients who are similar on all measured baseline characteristics, except for the exposure. Nearest neighbour without replacement propensity-score matching was performed for age, gender, year of surgery, tumour size, clinical T stage, grade, histology, and partial vs radical nephrectomy to compare treatment modalities (LRS vs ORS) resulting in balanced groups. Patients were censored at last follow-up or at the time of noncancer-related death. Log-rank testing was used to assess for differences in survival. The Kaplan–Meier method was used to estimate survival curves.

Study arms

Laparoscopic renal surgery (N = 226)

Open renal surgery (N = 226)

Characteristics

Arm-level characteristics

Characteristic	Laparoscopic renal surgery (N = 226)	Open renal surgery (N = 226)
% Female No of events	n = 67 ; % = 30	n = 72 ; % = 32
Mean age (SD) Median (IQR)	63.4 (56.5 to 70.6)	63 (56 to 71.6)
TNM stage: cT1 No of events	n = 78 ; % = 35	n = 77 ; % = 34
TNM stage: cT2 No of events	n = 55 ; % = 24	n = 50 ; % = 22
TNM stage: cT3 No of events	n = 59 ; % = 26	n = 66 ; % = 29
TNM stage: cT4 No of events	n = 6 ; % = 3	n = 2 ; % = 1
TNM stage: cTX No of events	n = 28 ; % = 12	n = 33 ; % = 14
Partial nephrectomy No of events	n = 26 ; % = 11.5	n = 28 ; % = 12.4
Radical nephrectomy No of events	n = 200 ; % = 88.5	n = 198 ; % = 87.6
Tumor size (cm)	7.1 (4.8 to 9.2)	7 (4.5 to 8.9)

Characteristic	Laparoscopic renal surgery (N = 226)	Open renal surgery (N = 226)
Median (IQR)		
Histological subtype: clear cell RCC No of events	n = 179 ; % = 79	n = 174 ; % = 77
Histological subtype: papillary RCC No of events	n = 20 ; % = 9	n = 33 ; % = 15
Histological subtype: chromophobe RCC No of events	n = 9 ; % = 4	n = 10 ; % = 4
Histological subtype: other No of events	n = 18 ; % = 8	n = 9 ; % = 4

Outcomes

Recurrence (RN)

Outcome	Laparoscopic renal surgery, , N = 200	Open renal surgery, , N = 198
Recurrence (RN) No of events	n = 67 ; % = 33.5	n = 80 ; % = 40.4

Recurrence (RN) - Polarity - Lower values are better

Recurrence (PN)

Outcome	Laparoscopic renal surgery, , N = 26	Open renal surgery, , N = 28
Recurrence (PN) No of events	n = 5 ; % = 19.2	n = 3 ; % = 10.7

Recurrence (PN) - Polarity - Lower values are better

Critical appraisal - GDT Crit App - ROBINS-I: a tool for non-randomised studies of interventions

All outcomes

Section	Question	Answer
Overall bias	Risk of bias judgement	Serious *(The study has a serious risk of bias due to confounding, as the study did not control the analysis for all the important confounding domains.)*
Overall bias	Directness	Directly applicable *(The study was conducted in Canada, which has a different healthcare system than the UK NHS. However, the interventions (laparoscopic renal surgery (RN or PN) and open renal surgery (RP or PN)) and the patient population (pT3) are relevant to the UK NHS setting. The outcome assessed in the study, such as recurrence-free survival is important for decision-making in the UK NHS context.)*

Rose, 2020

Bibliographic Reference	Rose, Kyle M; Navaratnam, Anojan K; Faraj, Kassem S; Abdul-Muhsin, Haidar M; Syal, Amit; Elias, Laila; Moss, Adyr A; Eversman, William G; Stone, William M; Money, Samuel R; Davila, Victor J; Tyson, Mark D; Castle, Erik P; Comparison of Open and Robot Assisted Radical Nephrectomy With Level I and II Inferior Vena Cava Tumor Thrombus: The Mayo Clinic Experience.; Urology; 2020; vol. 136; 152-157

Study details

Study type	Retrospective cohort study
Study location	US
Study setting	Hospital setting
Study dates	From 1998 to 2018
Sources of funding	Not reported
Inclusion criteria	Patients with renal cell carcinoma and inferior vena cava tumor thrombus

Exclusion criteria	Patients with venous tumor thrombus level 0, 3, and 4
Intervention(s)	Open radical nephrectomy with tumour thrombus (O-RNTT)
Comparator	Robot-assisted radical nephrectomy with tumour thrombus (RA-RNTT).
Outcome measures	Complications
Number of participants	Total number of patients: 52 O-RNTT: 28 RA-RNTT: 24
Duration of follow-up	Median (IQR): 79 months (21-112) and 24 months (7-41) for O-RNTT and RA-RNTT, respectively.
Loss to follow-up	Not reported
Methods of analysis	Kaplan-Meier plots were used to estimate the probability of OS and RFS in months since surgery. The log-rank test was utilized to compare differences in survival or recurrence in subgroups.
Additional comments	Adjuvant therapy was administered in 46% and 42% of patients in the open and robotic group, respectively.

Study arms

Open radical nephrectomy with tumour thrombus (N = 28)

Robot-assisted radical nephrectomy with tumour thrombus (N = 24)

Characteristics

Arm-level characteristics

Characteristic	Open radical nephrectomy with tumour thrombus (N = 28)	Robot-assisted radical nephrectomy with tumour thrombus (N = 24)
% Female No of events	n = 6 ; % = 21	n = 2 ; % = 11
Mean age (SD) Median (IQR)	66 (54 to 73)	63 (58 to 70)

Characteristic	Open radical nephrectomy with tumour thrombus (N = 28)	Robot-assisted radical nephrectomy with tumour thrombus (N = 24)
ASA score: 2 No of events	n = 3 ; % = 11	n = 4 ; % = 22
ASA score ≥3 No of events	n = 22 ; % = 79	n = 14 ; % = 78
ASA score: 4 No of events	n = 3 ; % = 11	n = 0 ; % = 0
ECOG score: 0 No of events	n = 15 ; % = 54	n = 13 ; % = 72
ECOG score =1 No of events	n = 9 ; % = 32	n = 4 ; % = 22
ECOG score: 2 No of events	n = 4 ; % = 14	n = 0 ; % = 0
ECOG score: 3 No of events	n = 0 ; % = 0	n = 1 ; % = 6
Histological subtype: clear cell RCC No of events	n = 25 ; % = 89	n = 20 ; % = 83

Outcomes

Complications

Outcome	Open radical nephrectomy with tumour thrombus, , N = 28	Robot-assisted radical nephrectomy with tumour thrombus, , N = 24
Total No of events	n = 12 ; % = 43	n = 4 ; % = 17

Outcome	Open radical nephrectomy with tumour thrombus, , N = 28	Robot-assisted radical nephrectomy with tumour thrombus, , N = 24
CD-I No of events	n = 2 ; % = 7.1	n = 0 ; % = 0
CD-II No of events	n = 7 ; % = 25	n = 3 ; % = 12.5
CD-IIIa No of events	n = 1 ; % = 3.6	n = 1 ; % = 4.2
CD-IIIb No of events	n = 0 ; % = 0	n = 0 ; % = 0
CD-IVa No of events	n = 0 ; % = 0	n = 0 ; % = 0
CD-IVb No of events	n = 1 ; % = 3.6	n = 0 ; % = 0
CD-V No of events	n = 1 ; % = 3.6	n = 0 ; % = 0

Complications - Polarity - Lower values are better

Critical appraisal - GDT Crit App - ROBINS-I: a tool for non-randomised studies of interventions

All outcomes

Section	Question	Answer
Overall bias	Risk of bias judgement	Serious *(The study has a serious risk of bias due to confounding, as the study did not adjust the results presented to control possible confounding factors.)*
Overall bias	Directness	Directly applicable *(The study was conducted in the US, which has a different healthcare system than the UK NHS. However, the interventions (open radical nephrectomy with tumour thrombus and robot-assisted radical nephrectomy with tumour thrombus) and the patient population (patients with renal cell carcinoma and inferior vena cava tumour thrombus) are relevant to the UK NHS setting. The outcome assessed in the study, such as complications is important for decision-making in the UK NHS context.)*

Vuong, 2021

Bibliographic Reference	Vuong, Nam-Son; Ferriere, Jean-Marie; Michiels, Clement; Calen, Laura; Tesi, Lorenso; Capon, Gregoire; Bensadoun, Henri; Alezra, Eric; Estrade, Vincent; Robert, Gregoire; Bladou, Franck; Bernhard, Jean-Christophe; Robot-assisted versus open surgery for radical nephrectomy with level 1-2 vena cava tumor thrombectomy: a French monocenter experience (UroCCR study #73).; Minerva urology and nephrology; 2021; vol. 73 (no. 4); 498-508

Study details

Study type	Retrospective cohort study
Study location	France
Study setting	Hospital setting
Study dates	From December 2015 to January 2020
Sources of funding	Not reported

Inclusion criteria	Patients with renal cancer with level 1-2 tumour thrombus involving the inferior vena cava
Exclusion criteria	Not reported
Intervention(s)	Open radical nephrectomy (ORP)
Comparator	Robot-assisted radical nephrectomy (RARP)
Outcome measures	Overall survival Complications
Number of participants	Total number of participants: 40 ORP: 30 RARP: 10
Duration of follow-up	The median (IQR) follow-up was 11 months (3.75-22.25). It was of 13 months (4.3-24.5) and 8 months (3.8-14.5) in the open and robotic group, respectively.
Loss to follow-up	Not reported
Methods of analysis	Regression models were applied to assure the comparability between groups and assess primary results in multivariate analysis.

Study arms

Open (N = 30)

Robotic-assisted (N = 10)

Characteristics

Arm-level characteristics

Characteristic	**Open (N = 30)**	**Robotic-assisted (N = 10)**
% Female No of events	n = 4 ; % = 13	n = 3 ; % = 30
Mean age (SD) Median (IQR)	67 (61.2 to 74)	73 (69 to 78.5)

Characteristic	Open (N = 30)	Robotic-assisted (N = 10)
Baseline renal function Median (IQR)	68.4 (54.2 to 80.2)	50 (45.1 to 60.7)
Tumor size (cm) Median (IQR)	10 (7.6 to 13)	7 (5.3 to 13.3)
TNM stage: T3b No of events	n = 28 ; % = 93.3	n = 10 ; % = 100
TNM stage: T4 No of events	n = 2 ; % = 6.7	n = 0 ; % = 0
TNM stage: N+ No of events	n = 11 ; % = 36.7	n = 5 ; % = 50
TNM stage: M+ No of events	n = 10 ; % = 33.3	n = 2 ; % = 20
Histological subtype: clear cell renal carcinoma No of events	n = 26 ; % = 86.7	n = 8 ; % = 80
Histological subtype: papillary RCC type II No of events	n = 4 ; % = 13.3	n = 2 ; % = 20

Outcomes

Complications

Outcome	Open, , N = 30	Robotic-assisted, , N = 10
Intraoperative No of events	n = 6 ; % = 20	n = 1 ; % = 10
Postoperative (CD > grade II) No of events	n = 11 ; % = 37	n = 3 ; % = 30

Complications - Polarity - Lower values are better

Survival

Outcome	Open, , N = 30	Robotic-assisted, , N = 10
All cause death No of events	n = 12 ; % = 40	n = 3 ; % = 30

All cause death - Polarity - Lower values are better

Critical appraisal - GDT Crit App - ROBINS-I: a tool for non-randomised studies of interventions

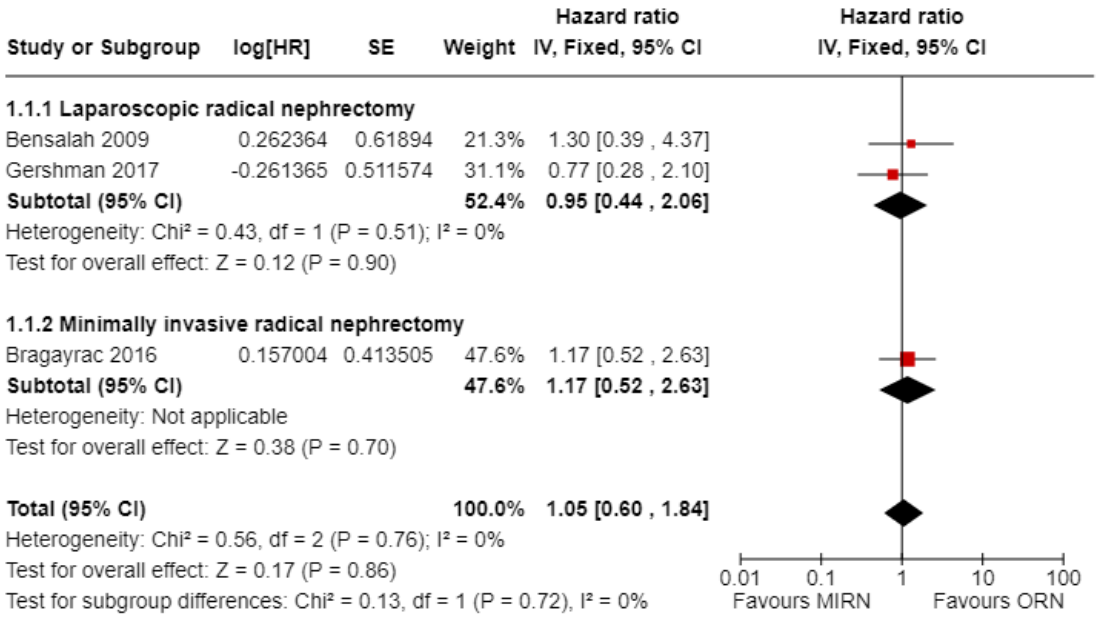
All outcomes

Section	Question	Answer
Overall bias	Risk of bias judgement	Serious *(The study described that a multivariable model was constructed but does not describe how and which confounders were used to adjust the analysis.)*
Overall bias	Directness	Directly applicable *(The study was conducted in France, which has a different healthcare system than the UK NHS. However, the interventions (open radical nephrectomy and robot-assisted radical nephrectomy) and the patient population (patients with renal cell carcinoma and inferior vena cava tumour thrombus) are relevant to the UK NHS setting. The outcome assessed in the study, such as complications is important for decision-making in the UK NHS context.)*

Appendix E – Forest plots

Minimally invasive radical nephrectomy vs Open radical nephrectomy

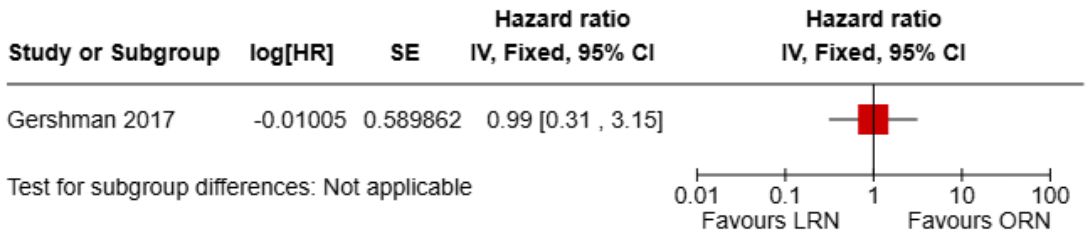
Figure 1 Overall survival ≤8.5 years



MIRN: minimally invasive radical nephrectomy, ORN: open radical nephrectomy

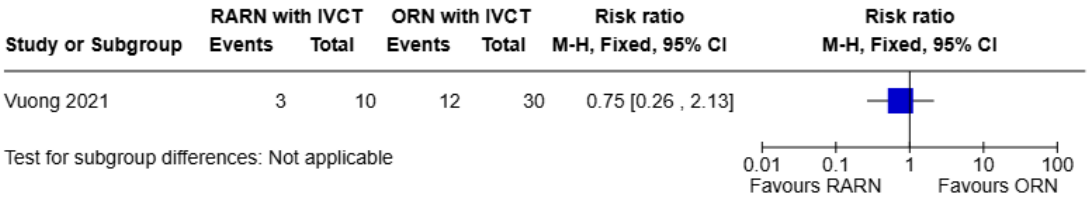
Note: Minimally invasive radical nephrectomy was performed using robot-assisted or laparoscopic surgery.

Figure 2 Cancer-specific mortality ≤8.5 years



LRN: laparoscopic radical nephrectomy, ORN: open radical nephrectomy

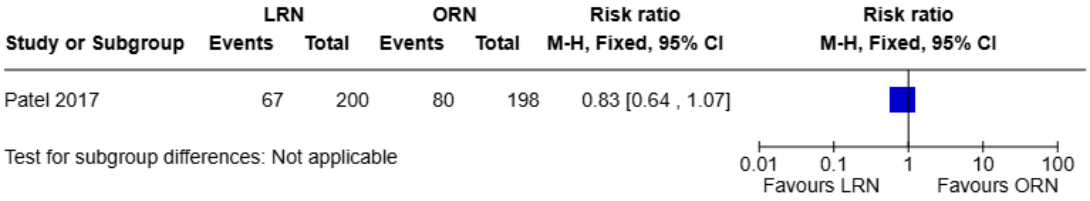
Figure 3 All-cause mortality - Radical nephrectomy in combination with inferior vena cava thrombectomy <2 years



RARN: robot-assisted radical nephrectomy, ORN: open radical nephrectomy

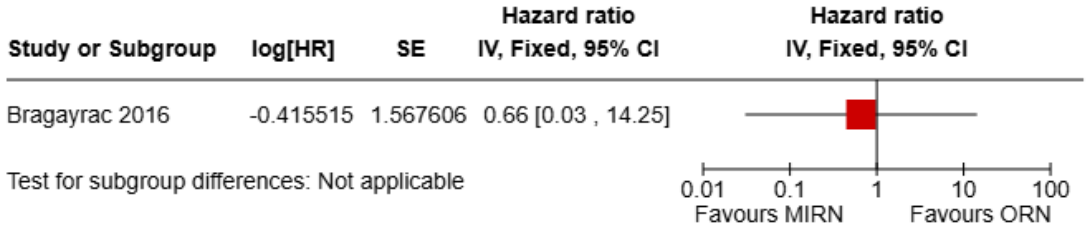
IVCT: inferior vena cava thrombectomy,

Figure 4 Recurrence <2 years



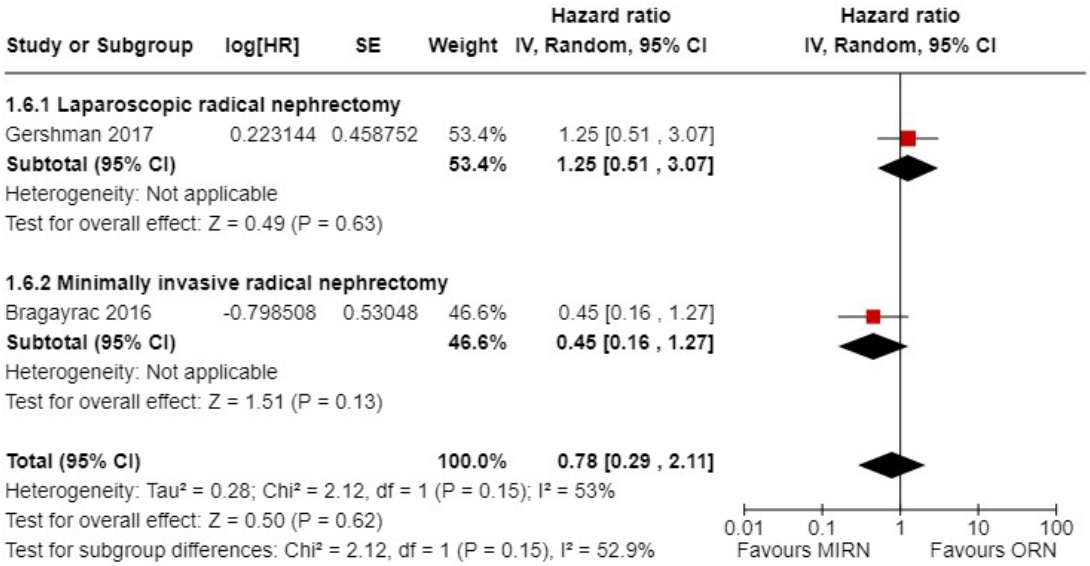
LRN: laparoscopic radical nephrectomy, ORN: open radical nephrectomy

Figure 5 Local recurrence < 3 years



MIRN: minimally invasive radical nephrectomy, ORN: open radical nephrectomy

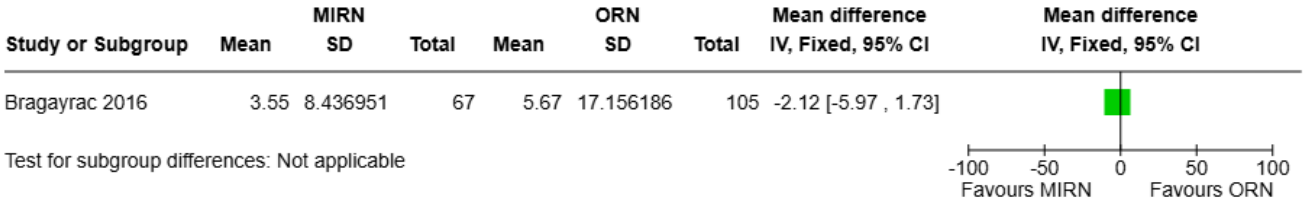
Figure 6 Distant recurrence ≤8.5 years



MIRN: minimally invasive radical nephrectomy, ORN: open radical nephrectomy

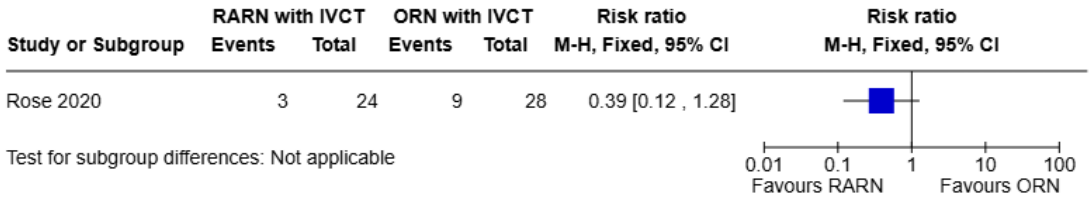
Note: Minimally invasive radical nephrectomy was performed using robot-assisted or laparoscopic surgery.

Figure 7 Length of stay (days)



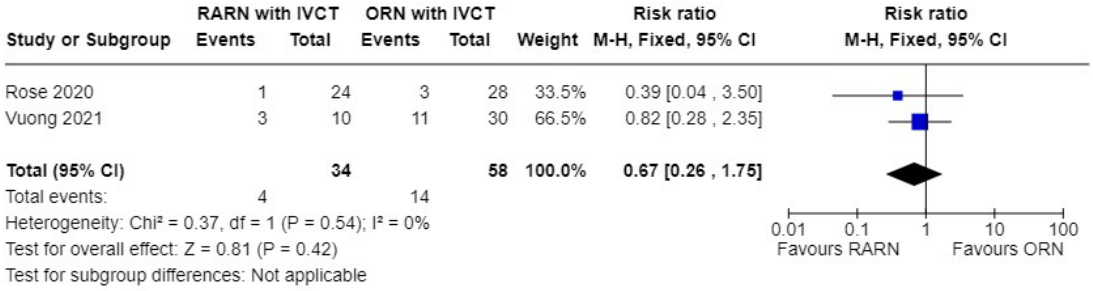
MIRN: minimally invasive radical nephrectomy, ORN: open radical nephrectomy

Figure 8 Postoperative severe adverse events – Clavien-Dindo I/II - Radical nephrectomy in combination with inferior vena cava thrombectomy



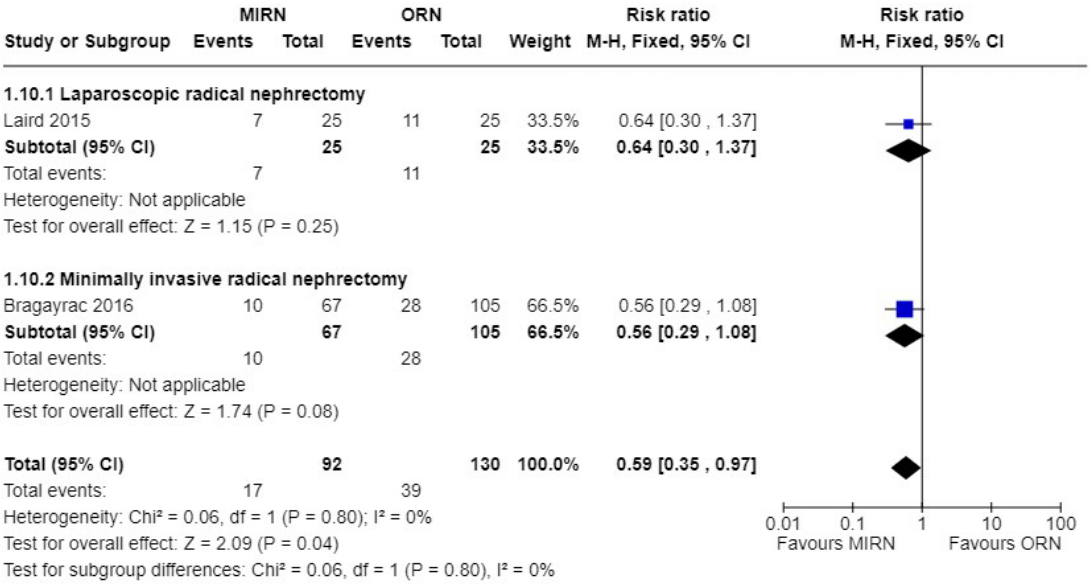
RARN: robot-assisted radical nephrectomy, ORN: open radical nephrectomy, IVCT: inferior vena cava thrombectomy.

Figure 9 Postoperative severe adverse events – Clavien-Dindo III/IV/V - Radical nephrectomy in combination with inferior vena cava thrombectomy



IVCT: inferior vena cava thrombectomy, RARN: robot-assisted radical nephrectomy, ORN: open radical nephrectomy.

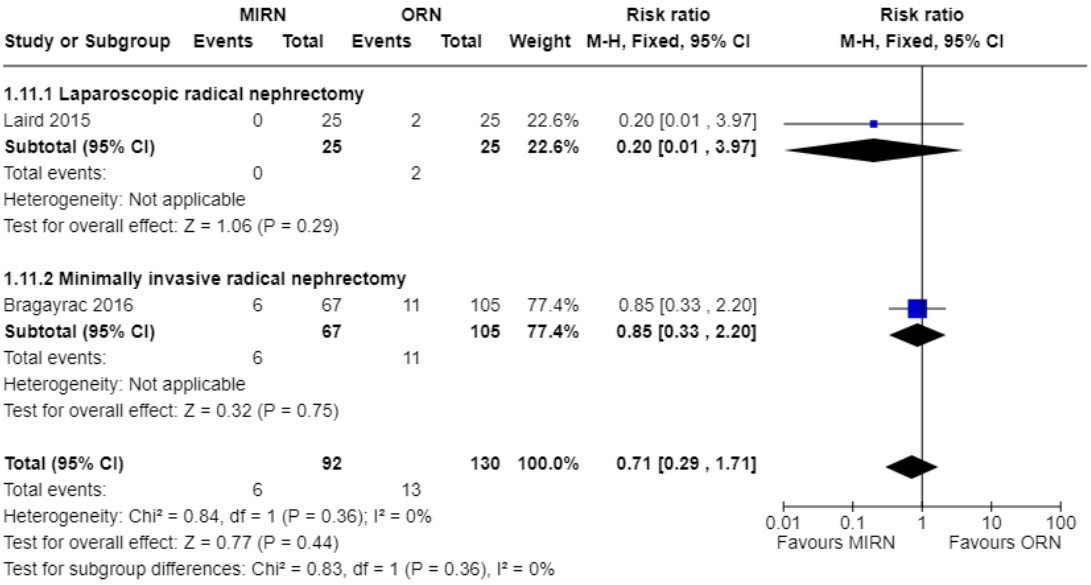
Figure 10 Postoperative severe adverse events – Clavien-Dindo I/II - Radical nephrectomy alone



MIRN: minimally invasive radical nephrectomy, ORN: open radical nephrectomy

Note: Minimally invasive radical nephrectomy was performed using robot-assisted or laparoscopic surgery.

Figure 11 Postoperative severe adverse events – Clavien-Dindo III/IV/V - Radical nephrectomy alone

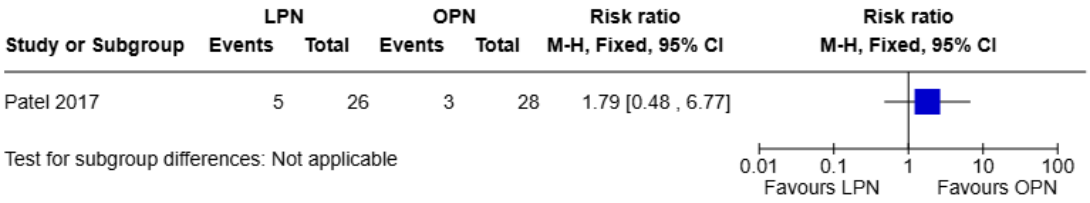


MIRN: minimally invasive radical nephrectomy, ORN: open radical nephrectomy

Note: Minimally invasive radical nephrectomy was performed using robot-assisted or laparoscopic surgery.

Laparoscopic partial nephrectomy vs Open partial nephrectomy

Figure 12 Recurrence <2 years



LPN: laparoscopic partial nephrectomy, OPN: open partial nephrectomy

Appendix F – GRADE tables

Table 9 Clinical evidence profile for minimally invasive radical nephrectomy vs open radical nephrectomy – Overall survival, cancer-specific mortality, all-cause mortality, recurrence, local recurrence, and distant recurrence

Certainty assessment							№ of patients		Effect		Certainty
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Minimally invasive radical nephrectomy**	**Open radical nephrectomy**	**Relative (95% CI)**	**Absolute (95% CI)**	
Overall survival ≤8.5 years											
3 [Bensalah 2009, Gershman 2017] (n=489)	non-randomised studies	very serious[a,b]	not serious	not serious	serious[c]	none	116	373	**HR 1.05** (0.60 to 1.84)	**Not calculable***	Very low
Cancer-specific mortality ≤8.5 years											
1 [Gershman 2017] (n=138)	non-randomised studies	serious[a]	serious[d]	not serious	serious[c]	none	5	133	**HR 0.99** (0.31 to 3.15)	**Not calculable***	Very low
All-cause mortality - Radical nephrectomy in combination with inferior vena cava thrombectomy <2 years											

Certainty assessment							№ of patients		Effect		Certainty
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Minimally invasive radical nephrectomy**	**Open radical nephrectomy**	**Relative (95% CI)**	**Absolute (95% CI)**	
1 [Vuong 2021] (n=40)	non-randomised studies	serious[a]	serious[d]	not serious	serious[c]	none	3/10 (30.0%)	12/30 (40.0%)	**RR 0.75** (0.26 to 2.13)	**100 fewer per 1,000** (from 296 fewer to 452 more)	Very low
Recurrence <2 years											
1 [Patel 2017] (n=398)	non-randomised studies	serious[a]	serious[d]	not serious	serious[c]	none	67/200 (33.5%)	80/198 (40.4%)	**RR 0.83** (0.64 to 1.07)	**69 fewer per 1,000** (from 145 fewer to 28 more)	Very low
Local recurrence <3 years											
1 [Bragayrac 2016] (n=172)	non-randomised studies	very serious[a,b]	serious[d]	not serious	serious[c]	none	67	105	**HR 0.66** (0.03 to 14.25)	**Not calculable***	Very low
Distant recurrence ≤8.5 years											

Certainty assessment							№ of patients		Effect		Certainty
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Minimally invasive radical nephrectomy**	**Open radical nephrectomy**	**Relative (95% CI)**	**Absolute (95% CI)**	
2 [Gershman 2017, Bragayrac 2016] (n=310)	non-randomised studies	very serious[a,b]	serious[e]	not serious	serious[c]	none	72	238	**HR 0.78** (0.29 to 2.11)	**Not calculable***	Very low

CI: confidence interval; **HR:** hazard ratio; **RR:** risk ratio

* It was not possible to calculate the absolute effect because the information needed to calculate this was not reported in the paper

Explanations

a. Downgraded once because the study did not control the analysis for all the important confounding domains.
b. Downgraded once because the study carried out a multivariable analysis of time-to-event outcomes, however, there is no information on how this analysis was carried out (which covariates were included in the multivariable analysis).
c. Downgraded once because 95% confidence interval for the effect size crossed the line of no effect.
d. Downgraded once because only a single study was identified.
e. Downgraded once becauseI^2 was between 41 and 60%.

Table 10 Clinical evidence profile for minimally invasive radical nephrectomy vs open radical nephrectomy – Length of stay (days)

Certainty assessment							№ of patients		Effect		Certainty
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Minimally invasive radical nephrectomy**	**Open radical nephrectomy**	**Relative (95% CI)**	**Absolute (95% CI)**	
Length of stay (days)											
1 [Bragayrac 2016] (n=172)	non-randomised studies	very serious[a,b]	serious[d]	not serious	serious[c]	none	67	105	**Not calculable***	**MD 2.12 lower** (5.97 lower to 1.73 higher)	Very low

CI: confidence interval; **MD:** mean difference; **NR:** not reported

* It was not possible to calculate the absolute effect because the information needed to calculate this was not reported in the paper

Explanations

a. Downgraded once because the study did not control the analysis for all the important confounding domains.
b. Downgraded once because the study carried out a multivariable analysis of time-to-event outcomes, however, there is no information on how this analysis was carried out (which covariates were included in the multivariable analysis).
c. Downgraded once because 95% confidence interval for the effect size crossed the line of no effect.

d. Downgraded once because only a single study was identified.

Table 11 Clinical evidence profile for minimally invasive radical nephrectomy vs open radical nephrectomy – Postoperative severe adverse events Clavien-Dindo

Certainty assessment							№ of patients		Effect		Certainty
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Minimally invasive radical nephrectomy**	**Open radical nephrectomy**	**Relative (95% CI)**	**Absolute (95% CI)**	
Postoperative severe adverse events – Clavien-Dindo I/II - Radical nephrectomy in combination with inferior vena cava thrombectomy											
1 [Rose 2020] (n=52)	non-randomised studies	serious[a]	serious[d]	not serious	serious[c]	none	3/24 (12.5%)	9/28 (32.1%)	**RR 0.39** (0.12 to 1.28)	**196 fewer per 1,000** (from 283 fewer to 90 more)	Very low
Postoperative severe adverse events – Clavien-Dindo III/IV/V - Radical nephrectomy in combination with inferior vena cava thrombectomy											

Certainty assessment							№ of patients		Effect		Certainty
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Minimally invasive radical nephrectomy**	**Open radical nephrectomy**	**Relative (95% CI)**	**Absolute (95% CI)**	
2 [Rose 2020, Vuong 2021] (n=92)	non-randomised studies	serious[a]	not serious	not serious	serious[c]	none	4/34 (11.8%)	14/58 (24.1%)	**RR 0.67** (0.26 to 1.75)	**80 fewer per 1,000** (from 179 fewer to 181 more)	Very low
Postoperative severe adverse events – Clavien-Dindo I/II - Radical nephrectomy alone											
2 [Laird 2015, Bragayrac 2016] (n=222)	non-randomised studies	very serious[a,b]	not serious	not serious	not serious	none	17/92 (18.5%)	39/130 (30.0%)	**RR 0.59** (0.35 to 0.97)	**123 fewer per 1,000** (from 195 fewer to 9 fewer)	Low
Postoperative severe adverse events – Clavien-Dindo III/IV/V - Radical nephrectomy alone											

Certainty assessment							№ of patients		Effect		Certainty
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Minimally invasive radical nephrectomy**	**Open radical nephrectomy**	**Relative (95% CI)**	**Absolute (95% CI)**	
2 [Laird 2015, Bragayrac 2016] (n=222)	non-randomised studies	very serious[a,b]	not serious	not serious	serious[c]	none	6/92 (6.5%)	13/130 (10.0%)	**RR 0.71** (0.29 to 1.71)	**29 fewer per 1,000** (from 71 fewer to 71 more)	Very low

CI: confidence interval; **RR:** risk ratio

Explanations

a. Downgraded once because the study did not control the analysis for all the important confounding domains.
b. Downgraded once because the study carried out a multivariable analysis of time-to-event outcomes, however, there is no information on how this analysis was carried out (which covariates were included in the multivariable analysis).
c. Downgraded once because the 95% confidence interval for the effect size crossed the line of no effect.
d. Downgraded once because only a single study was identified.

Table 12 Clinical evidence profile for laparoscopic partial nephrectomy vs open partial nephrectomy

Certainty assessment							№ of patients		Effect		Certainty
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Minimally invasive radical nephrectomy**	**Open radical nephrectomy**	**Relative (95% CI)**	**Absolute (95% CI)**	
Recurrence <2 years											
1 [Patel 2017] (n=54)	non-randomised studies	serious[a]	serious[b]	not serious	serious[c]	none	5/26 (19.2%)	3/28 (10.7%)	**RR 1.79** (0.48 to 6.77)	**85 more per 1,000** (from 56 fewer to 618 more)	Very low

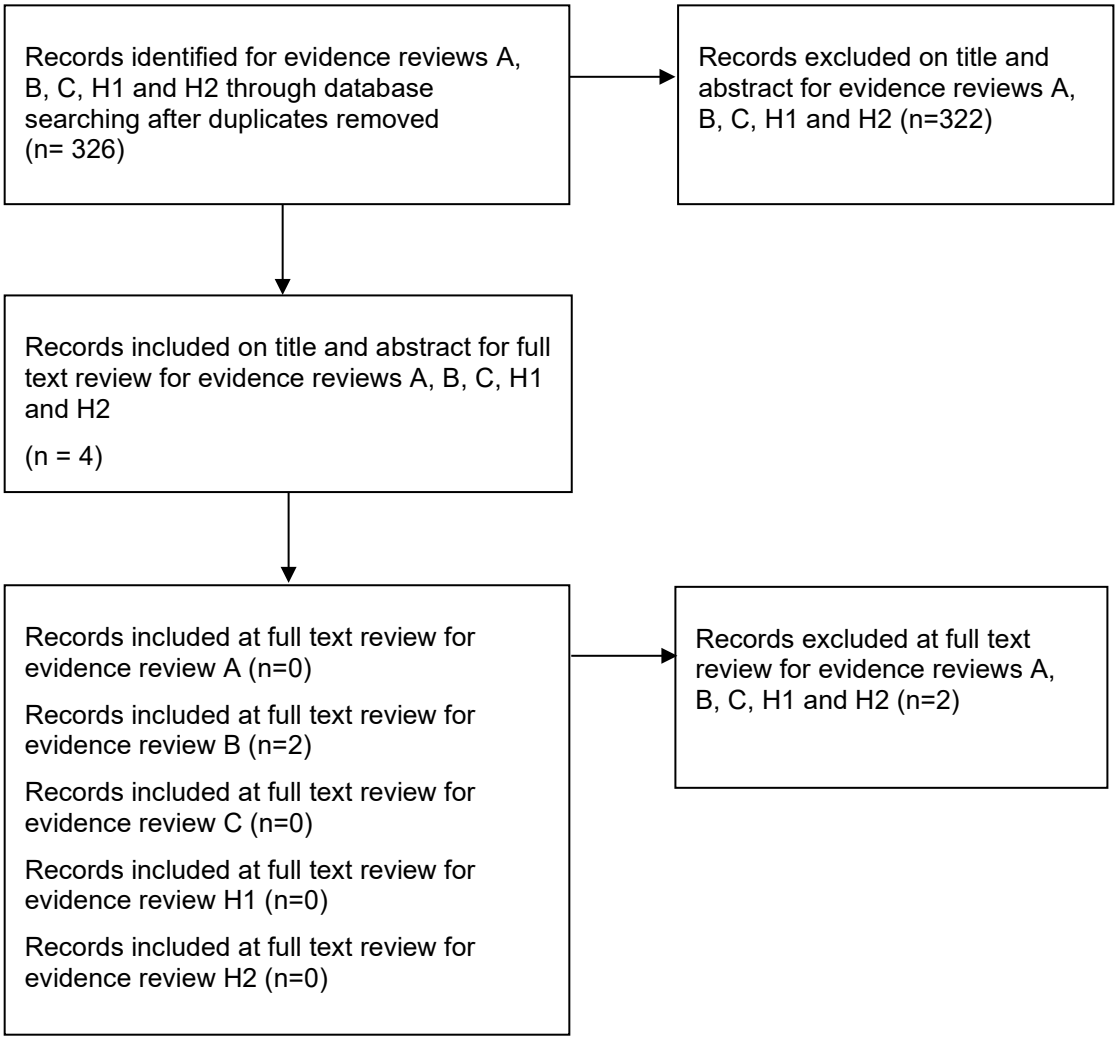
CI: confidence interval; **RR:** risk ratio

Explanations

a. Downgraded once because the study did not control the analysis for all the important confounding domains.
b. Downgraded once because only a single study was identified.
c. Downgraded once because the 95% confidence interval for the effect size crossed the line of no effect.

Appendix G – Economic evidence study selection

Figure 13: Economic evidence study selection



Appendix H – Economic evidence tables

No economic evidence was identified for this review question.

Appendix I – Health economic model

No original economic modelling was conducted for this review question. A cost analysis was conducted to aid in decision making for this review question, see the accompanying cost analysis report for further details.

Appendix J – Excluded studies

Effectiveness studies

Study	Reason
Abdel Raheem, Ali, Chang, Ki Don, Alenzi, Mohammed Jayed et al. (2019) Robot-Assisted Partial Nephrectomy for Totally Endophytic Renal Tumors: Step by Step Standardized Surgical Technique and Long-Term Outcomes with a Median 59-Month Follow-Up. Journal of laparoendoscopic & advanced surgical techniques. Part A 29(1): 1-11	- Exclude , review C- Study included only patients T1-T2
Abdollah, Firas, Sun, Maxine, Thuret, Rodolphe et al. (2011) Mortality and morbidity after cytoreductive nephrectomy for metastatic renal cell carcinoma: a population-based study. Annals of surgical oncology 18(10): 2988-96	- Comparator in study does not match that specified in protocol *Compares radical nephrectomy Vs. cytoreductive nephrectomy.Unclear about the use of SACT*
Abedali, Zain A, Monn, M Francesca, Huddleston, Patrick et al. (2020) Robotic and open partial nephrectomy for intermediate and high complexity tumors: a matched-pairs comparison of surgical outcomes at a single institution. Scandinavian journal of urology 54(4): 313-317	- Exclude - For , review C Proportion of patients stage T3 < 90%
Abu-Ghanem, Yasmin, Fernandez-Pello, Sergio, Bex, Axel et al. (2020) Limitations of Available Studies Prevent Reliable Comparison Between Tumour Ablation and Partial Nephrectomy for Patients with Localised Renal Masses: A Systematic Review from the European Association of Urology Renal Cell Cancer Guideline Panel. European urology oncology 3(4): 433-452	- Data not reported in an extractable format
Abu-Ghanem, Yasmin, van Thienen, Johannes V, Blank, Christian et al. (2022) Cytoreductive nephrectomy and exposure to sunitinib - a post hoc analysis of the Immediate Surgery or Surgery After Sunitinib Malate in Treating Patients With Metastatic Kidney Cancer (SURTIME) trial. BJU international 130(1): 68-75	- Study does not contain a relevant outcome *No additional outcomes to reported*
Acosta Ruiz, Vanessa, Ladjevardi, Sam, Brekkan, Einar et al. (2019) Periprocedural outcome after laparoscopic partial nephrectomy versus radiofrequency ablation for T1 renal tumors: a	- Study published before included SR/s for the outcome/s reported

Study	Reason
modified R.E.N.A.L nephrometry score adjusted comparison. Acta radiologica (Stockholm, Sweden : 1987) 60(2): 260-268	
Aeppli, S., Engeler, D.S., Fischer, S. et al. (2022) Incidence and outcome of patients with renal cell carcinoma treated with partial or radical nephrectomy in the Cantons St Gallen and Appenzell 2009-2018. Swiss Medical Weekly 152(2324): w30175	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*
Ahn, Thomas, Ellis, Robert J, White, Victoria M et al. (2018) Predictors of new-onset chronic kidney disease in patients managed surgically for T1a renal cell carcinoma: An Australian population-based analysis. Journal of surgical oncology 117(7): 1597-1610	- Primary study covered fully by an included systematic review
Alasker, Ahmed, Alnafisah, Turki Rashed, Alghafees, Mohammad et al. (2023) Preserving Renal Function without Compromising Oncological Outcomes: A Comparative Study of Partial and Total Nephrectomies in T3 Stage Renal Cell Carcinoma. Journal of kidney cancer and VHL 10(4): 28-32	- Comparator in study does not match that specified in protocol *Compared PN vs RN in T3a RCC: not relevant for review C*
Ali, Muhammad, Kwon, Young Suk, Koo, Kendrick et al. (2025) Salvage stereotactic ablative body radiotherapy after thermal ablation of primary kidney cancer. BJU international 135(1): 110-116	- Study did not compare the interventions of interest
Alnimer, Yanal, Qasrawi, Ayman, Yan, Donglin et al. (2021) Prognostic Impact of Cytoreductive Nephrectomy in Patients with Metastatic Renal Cell Carcinoma: Data from a Large Population-Based Database. Urology journal 19(2): 111-119	- Exclude - Outcome was measured using a measure out of scope
Alper, Isik and Yuksel, Esra (2016) Comparison of Acute and Chronic Pain after Open Nephrectomy versus Laparoscopic Nephrectomy: A Prospective Clinical Trial. Medicine 95(16): e3433	- There is no information on cT or pT stage
Alshyarba, M.H.M., Alamri, A., Assiri, J.M.M. et al. (2020) Treatment and overall survival in renal cell carcinoma. Bahrain Medical Bulletin 42(2): 113-115	- Data not reported in an extractable format *Kaplan-Meier for overall survival*
Althaus, Adam B, Chang, Peter, Mao, Jialin et al. (2020) Patient-Reported Quality of Life and	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*

Study	Reason
Convalescence After Minimally Invasive Kidney Cancer Surgery. Urology 144: 123-129	
Alvim, Ricardo, Tin, Amy, Nogueira, Lucas et al. (2021) A comparison of oncologic and functional outcomes in patients with pt3a renal cell carcinoma treated with partial and radical nephrectomy. International braz j urol : official journal of the Brazilian Society of Urology 47(4): 777-783	- Comparator in study does not match that specified in protocol *Compared RN with PN in T3a tumours - not relevant for review C*
Alzamzami, M, Geirbely, A, Ahmed, MB et al. (2023) A Literature Review of Perioperative Outcomes of Robotic Radical Nephrectomy (RRN) Versus Laparoscopic Radical Nephrectomy (LRN) for Renal Cell Carcinoma (RCC). Cureus 15(11): e49077	- Exclude - For review C Proportion of patients stage T3 < 90%
Amin, C., Wallen, E., Pruthi, R.S. et al. (2008) Preoperative Tyrosine Kinase Inhibition as an Adjunct to Debulking Nephrectomy. Urology 72(4): 864-868	- Study does not contain a relevant intervention *Irrelevant nephrectomy type. Study observes the patients undergone laparoscopic and radical nephrectomy*
Andrade, Hiury S, Zargar, Homayoun, Akca, Oktay et al. (2017) Is Robotic Partial Nephrectomy Safe for T3a Renal Cell Carcinoma? Experience of a High-Volume Center. Journal of endourology 31(2): 153-157	- Comparator in study does not match that specified in protocol *Compares RN and PN in T3a RCC - not relevant for review C*
Andrews, Jack R, Lohse, Christine M, Boorjian, Stephen A et al. (2022) Outcomes following cytoreductive nephrectomy without immediate postoperative systemic therapy for patients with synchronous metastatic renal cell carcinoma. Urologic oncology 40(4): 166e1-166e8	- Comparator in study does not match that specified in protocol *None of the participants had SACT*
Anele, Uzoma A, Marchioni, Michele, Yang, Bo et al. (2019) Robotic versus laparoscopic radical nephrectomy: a large multi-institutional analysis (ROSULA Collaborative Group). World journal of urology 37(11): 2439-2450	- Exclude - For review C Proportion of patients stage T3 < 90%
Ansari, Jawaher, Farrag, Ashraf, Ali, Arwa et al. (2021) Concurrent use of nivolumab and radiotherapy for patients with metastatic non-small cell lung cancer and renal cell carcinoma with oligometastatic disease progression on nivolumab. Molecular and clinical oncology 15(4): 214	- Study does not contain a relevant outcome

Study	Reason
Antonelli, Alessandro, Palumbo, Carlotta, Sandri, Marco et al. (2020) Renal Function Impairment Below Safety Limits Correlates With Cancer-specific Mortality in Localized Renal Cell Carcinoma: Results From a Single-center Study. Clinical genitourinary cancer 18(4): e360-e367	- Study does not contain a relevant outcome
Antonelli, Alessandro, Veccia, Alessandro, Pavan, Nicola et al. (2019) Outcomes of Partial and Radical Nephrectomy in Octogenarians - A Multicenter International Study (Resurge). Urology 129: 139-145	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*
Aron, Monish, Koenig, Phillipe, Kaouk, Jihad H et al. (2008) Robotic and laparoscopic partial nephrectomy: a matched-pair comparison from a high-volume centre. BJU international 102(1): 86-92	- There is no information on cT or pT stage
Artsitas, Sotirios, Artsitas, Dimitrios, Segkou, Ioanna et al. (2022) Considering "Trifecta" as a Single Outcome when Comparing Robotic With Open Partial Nephrectomy: A Mathematical Model of Volume Conservation and Systematic Review. In vivo (Athens, Greece) 36(6): 2558-2578	- Exclude - assessed outcome is out of scope
Bacic, Janine, Liu, Tao, Thompson, R Houston et al. (2020) Emulating Target Clinical Trials of Radical Nephrectomy With or Without Lymph Node Dissection for Renal Cell Carcinoma. Urology 140: 98-106	- Comparator in study does not match that specified in protocol *LND vs no LND*
Badrigilan, S., Meola, A., Chang, S.D. et al. (2023) Stereotactic radiosurgery with immune checkpoint inhibitors for brain metastases: a meta-analysis study. British Journal of Neurosurgery 37(6): 1533-1543	- Exclude - wrong population
Baio, Raffaele, Molisso, Giovanni, Caruana, Christian et al. (2023) "Could Patient Age and Gender, along with Mass Size, Be Predictive Factors for Benign Kidney Tumors?": A Retrospective Analysis of 307 Consecutive Single Renal Masses Treated with Partial or Radical Nephrectomy. Bioengineering (Basel, Switzerland) 10(7)	- Study does not contain a relevant outcome

Study	Reason
Bamias, Aristotle, Tzannis, Kimon, Papatsoris, Athanasios et al. (2014) Prognostic significance of cytoreductive nephrectomy in patients with synchronous metastases from renal cell carcinoma treated with first-line sunitinib: a European multiinstitutional study. Clinical genitourinary cancer 12(5): 373-83	- Mixed population of SACT pre/post non-pharmacological regimens *No information available to interpret if the SACT was given before or after CN*
Baudo, A., Incesu, R.-B., Morra, S. et al. (2023) Other-Cause Mortality, According to Partial vs. Radical Nephrectomy: Age and Stage Analyses. Clinical Genitourinary Cancer	- Study does not contain a relevant outcome
Bayrak, Omer, Seckiner, Ilker, Erturhan, Sakip et al. (2014) Comparison of the complications and the cost of open and laparoscopic radical nephrectomy in renal tumors larger than 7 centimeters. Urology journal 11(1): 1222-7	- Exclude - For review C Proportion of patients stage T3 < 90%
Bazzi, Wassim M, Sjoberg, Daniel D, Feuerstein, Michael A et al. (2015) Long-term survival rates after resection for locally advanced kidney cancer: Memorial Sloan Kettering Cancer Center 1989 to 2012 experience. The Journal of urology 193(6): 1911-6	- Comparator in study does not match that specified in protocol
Bekema, Hendrika J, MacLennan, Steven, Imamura, Mari et al. (2013) Systematic review of adrenalectomy and lymph node dissection in locally advanced renal cell carcinoma. European urology 64(5): 799-810	- Comparator in study does not match that specified in protocol
Beksac, Alp T, Okhawere, Kennedy E, Abou Zeinab, Mahmoud et al. (2022) Robotic partial nephrectomy for management of renal mass in patients with a solitary kidney: can we expand the indication to T2 and T3 disease?. Minerva urology and nephrology 74(2): 203-208	- Exclude - For review C Proportion of patients stage T3 < 90%
Benichou, Ygal, Audenet, Francois, Bensalah, Karim et al. (2023) Partial nephrectomy in solitary kidneys: comparison between open surgery and robotic-assisted laparoscopy on perioperative and functional outcomes (UroCCR-54 study). World journal of urology 41(2): 315-324	- Exclude - For review C Proportion of patients stage T3 < 90%
Bianchi, Lorenzo, Chessa, Francesco, Piazza, Pietro et al. (2022) Percutaneous ablation or minimally invasive partial nephrectomy for cT1a	- Secondary publication of an included study that does not provide any additional relevant information

Study	Reason
renal masses? A propensity score-matched analysis. International journal of urology : official journal of the Japanese Urological Association 29(3): 222-228	
Binsaleh, Saleh, Madbouly, Khaled, Matsumoto, Edward D et al. (2015) A Prospective Randomized Study of Pfannenstiel Versus Expanded Port Site Incision for Intact Specimen Extraction in Laparoscopic Radical Nephrectomy. Journal of endourology 29(8): 913-8	- Exclude - Intervention is out of scope
Blom, Jan H M, van Poppel, Hein, Marechal, Jean M et al. (2009) Radical nephrectomy with and without lymph-node dissection: final results of European Organization for Research and Treatment of Cancer (EORTC) randomized phase 3 trial 30881. European urology 55(1): 28-34	- Comparator in study does not match that specified in protocol *Lymphadenectomy vs no lymphadenectomy*
Bosse, Dominick, Lin, Xun, Simantov, Ronit et al. (2019) Response of Primary Renal Cell Carcinoma to Systemic Therapy. European urology 76(6): 852-860	- Not a relevant study design *Pooled Analysis*
Boylu, U., Basatac, C., Yildirim, U. et al. (2015) Comparison of surgical, functional, and oncological outcomes of open and robot-assisted partial nephrectomy. Journal of Minimal Access Surgery 11(1): 72-77	- Exclude - For review C. Proportion of patients stage T3 < 90%
Bravi, C.A., on behalf of the Junior ERUS/Young Academic Urologist Working Group on Robot-Assisted, Surgery, Dell'Oglio, P. et al. (2024) Surgical Experience and Functional Outcomes after Laparoscopic and Robot-Assisted Partial Nephrectomy: Results from a Multi-Institutional Collaboration. Journal of Clinical Medicine 13(19): 6016	- Exclude - review C. Patients with localised tumour
Breda, Alberto; Anterasian, Christine; Belldegrun, Arie (2010) Management and outcomes of tumor recurrence after focal ablation renal therapy. Journal of endourology 24(5): 749-52	- More recent systematic review included that covers the same topic
Britton, Cameron J, Sharma, Vidit, Lohse, Christine M et al. (2022) Progression of Chronic Kidney Disease Following Radical and Partial Nephrectomy. Urology 169: 125-133	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*

Study	Reason
Brown, Janet E, Royle, Kara-Louise, Gregory, Walter et al. (2023) Temporary treatment cessation versus continuation of first-line tyrosine kinase inhibitor in patients with advanced clear cell renal cell carcinoma (STAR): an open-label, non-inferiority, randomised, controlled, phase 2/3 trial. The Lancet. Oncology 24(3): 213-227	- Study does not contain a relevant intervention
Buckland, Benjamin, Tree, Kevin, Best, Oliver et al. (2024) Robotic versus Laparoscopic Partial Nephrectomy: A Systematic Review and Meta-Analysis of Randomised Trials. Surgical technology international 45	- Exclude - review C. Patients with localised tumour
Burgess, Neil A, Koo, Brendan C, Calvert, Robert C et al. (2007) Randomized trial of laparoscopic v open nephrectomy. Journal of endourology 21(6): 610-3	- There is no information on cT or pT stage
Cacciamani, Giovanni E, Medina, Luis G, Gill, Tania et al. (2018) Impact of Surgical Factors on Robotic Partial Nephrectomy Outcomes: Comprehensive Systematic Review and Meta-Analysis. The Journal of urology 200(2): 258-274	- Exclude - For review C. Proportion of patients stage T3 < 90%
Cai, Yi; Li, Han-Zhong; Zhang, Yu-Shi (2018) Comparison of Partial and Radical Laparascopic Nephrectomy: Long-Term Outcomes for Clinical T1b Renal Cell Carcinoma. Urology journal 15(2): 16-20	- Non-OECD country
Calpin, Gavin G, Ryan, Fintan R, McHugh, Fiachra T et al. (2023) Comparing the outcomes of open, laparoscopic and robot-assisted partial nephrectomy: a network meta-analysis. BJU international 132(4): 353-364	- Exclude - For review C. Proportion of patients stage T3 < 90%
Calpin, GG, Ryan, FR, McHugh, FT et al. (2023) Comparing the Outcomes of Open, Laparoscopic & Robotic Partial Nephrectomy: A Network Meta-Analysis. BJU international	- Duplicate reference
Campi, Riccardo, Berni, Alessandro, Amparore, Daniele et al. (2022) Impact of frailty on perioperative and oncologic outcomes in patients undergoing surgery or ablation for renal cancer: a systematic review. Minerva urology and nephrology 74(2): 146-160	- More recent systematic review included that covers the same topic

Study	Reason
Cao, Dalong, Huang, Yongqiang, Zhang, Chuankai et al. (2019) Adverse Effect of Lymph Node Dissection in Metastatic Renal Cell Cancer Patients Treated with Cytoreductive Nephrectomy: A Contemporary Analysis of Survival. Journal of Cancer 10(19): 4639-4646	- Study did not compare the interventions of interest
Capitanio, U., Larcher, A., Cianflone, F. et al. (2020) Hypertension and Cardiovascular Morbidity Following Surgery for Kidney Cancer. European Urology Oncology 3(2): 209-215	- Primary study covered fully by an included systematic review
Capitanio, Umberto, Zini, Laurent, Perrotte, Paul et al. (2008) Cytoreductive partial nephrectomy does not undermine cancer control in metastatic renal cell carcinoma: a population-based study. Urology 72(5): 1090-5	- Study does not contain a relevant intervention *Compares partial nephrectomy with radical nephrectomy*
Carbonara, Umberto, Ditonno, Francesco, Beksac, Alp T et al. (2025) Percutaneous Cryotherapy and Radiofrequency Ablation of Renal Masses: Multicenter Comparative Analysis with Minimum 3-Year Follow-up. International braz j urol : official journal of the Brazilian Society of Urology 51(2)	- Compares two types of ablation
Carvalho, Filipe L F, Zheng, Chaoyi, Witmer, Kenneth et al. (2019) Complications associated with perioperative use of tyrosine kinase inhibitor in cytoreductive nephrectomy. Scientific reports 9(1): 15272	- Study does not contain a relevant intervention *Compares nephrectomy followed by SACT vs. nephrectomy alone.- study evaluates the effect of preoperative SACT. It's unclear whether SACT was given before or after the surgery.*
Castilho, Tiago Mendonca Lopez, Lemos, Gustavo Caserta, Cha, Jonathan Doyun et al. (2020) Transition from open partial nephrectomy directly to robotic surgery: experience of a single surgeon to achieve "TRIFECTA". International braz j urol : official journal of the Brazilian Society of Urology 46(5): 814-821	- Exclude - Study with a single arm
Cerrato, Clara, Meagher, Margaret F, Autorino, Riccardo et al. (2023) Partial versus radical nephrectomy for complex renal mass: multicenter comparative analysis of functional outcomes (Rosula collaborative group). Minerva urology and nephrology 75(4): 425-433	- Study does not contain a relevant outcome *Outcomes presented for T1, T2 and T3 combined*
Chan, Vinson Wai-Shun, Tan, Wei Shen, Leow, Jeffrey J et al. (2021) Delayed surgery for	- Exclude - Result reported in the most updated MA

Study	Reason
localised and metastatic renal cell carcinoma: a systematic review and meta-analysis for the COVID-19 pandemic. World journal of urology 39(12): 4295-4303	
Chanbour, Hani, Chen, Jeffrey W, Bendfeldt, Gabriel A et al. (2024) Impact of Targeted Systemic Therapy and Radiotherapy on Patients Undergoing Spine Surgery for Metastatic Renal Cell Carcinoma. International journal of spine surgery 18(3): 343-352	- Exclude - Intervention is out of scope *Spinal surgery*
Chang, Ki Don, Abdel Raheem, Ali, Kim, Kwang Hyun et al. (2018) Functional and oncological outcomes of open, laparoscopic and robot-assisted partial nephrectomy: a multicentre comparative matched-pair analyses with a median of 5 years' follow-up. BJU international 122(4): 618-626	- Exclude , review C- Study included only patients T1-T2
Chang, Xiaofeng, Liu, Tieshi, Zhang, Fan et al. (2015) Radiofrequency ablation versus partial nephrectomy for clinical T1a renal-cell carcinoma: long-term clinical and oncologic outcomes based on a propensity score analysis. Journal of endourology 29(5): 518-25	- Non-OECD country
Chang, Xiaofeng, Zhang, Fan, Liu, Tieshi et al. (2015) Radio frequency ablation versus partial nephrectomy for clinical T1b renal cell carcinoma: long-term clinical and oncologic outcomes. The Journal of urology 193(2): 430-5	- Non-OECD country
Chang, Ying-Hsu, Chang, Su-Wei, Liu, Chung-Yi et al. (2018) Demographic characteristics and complications of open and minimally invasive surgeries for renal cell carcinoma: a population-based case-control study in Taiwan. Therapeutics and clinical risk management 14: 1235-1241	- Non-OECD country
Chapin, Brian F, Delacroix, Scott E Jr, Culp, Stephen H et al. (2011) Safety of presurgical targeted therapy in the setting of metastatic renal cell carcinoma. European urology 60(5): 964-71	- Comparator in study does not match that specified in protocol *Study compares SACT followed by CN with immediate CN. Results section indicates that both groups received SACT post surgery as well.*
Chapman, Terence N, Sharma, Satish, Zhang, Shaozeng et al. (2008) Laparoscopic lymph node dissection in clinically node-negative patients	- Comparator in study does not match that specified in protocol *LND vs no LND*

Study	Reason
undergoing laparoscopic nephrectomy for renal carcinoma. Urology 71(2): 287-91	
Chen, Bo, Li, Jinze, Huang, Yin et al. (2023) The role of cytoreductive nephrectomy in metastatic renal cell carcinoma in the targeted therapy and immunological therapy era: a systematic review and meta-analysis. International journal of surgery (London, England) 109(4): 982-994	- Exclude - error in the paper
Chen, Yonghui, Wu, Xiaorong, Zhou, Jiale et al. (2022) Thermal ablation assisted laparoscopic partial nephrectomy for clinical T1b renal tumors. Minimally invasive therapy & allied technologies : MITAT : official journal of the Society for Minimally Invasive Therapy 31(2): 179-184	- Non-OECD country
Cheung, Douglas C and Finelli, Antonio (2017) Active Surveillance in Small Renal Masses in the Elderly: A Literature Review. European urology focus 3(45): 340-351	- More recent systematic review included that covers the same topic
Cheung, Patrick, Patel, Samir, North, Scott A et al. (2021) Stereotactic Radiotherapy for Oligoprogression in Metastatic Renal Cell Cancer Patients Receiving Tyrosine Kinase Inhibitor Therapy: A Phase 2 Prospective Multicenter Study. European urology 80(6): 693-700	- Not a relevant study design
Chiancone, Francesco, Fabiano, Marco, Meccariello, Clemente et al. (2021) Laparoscopic versus open partial nephrectomy for the management of highly complex renal tumors with PADUA score 10: A single center analysis. Urologia 88(4): 343-347	- Exclude, review C- Study included only patients T1-T2
Chiou, Jiun-Kai, Chang, Li-Wen, Li, Jian-Ri et al. (2023) Metastasectomy Improves Overall Survival in Metastatic Renal Cell Carcinoma: A Retrospective Cohort Study. Anticancer research 43(7): 3193-3201	- Mixed population of SACT pre/post non-pharmacological regimens *All participants received SACT. Not sufficient information to know the timeline of SACT.Compares patients undergone metastasectomy vs. non-metastasectomy.*
Chlorogiannis, David-Dimitris, Kratiras, Zisis, Efthymiou, Evgenia et al. (2024) Percutaneous Microwave Ablation Versus Robot-Assisted Partial Nephrectomy for Stage I Renal Cell Carcinoma: A Propensity-Matched Cohort Study Focusing Upon Long-Term Follow-Up of	- Data not reported in an extractable format

Study	Reason
Oncologic Outcomes. Cardiovascular and interventional radiology 47(5): 573-582	
Cho, C L, Ho, K L, Chu, S S M et al. (2011) Robot-assisted versus standard laparoscopic partial nephrectomy: comparison of perioperative outcomes from a single institution. Hong Kong medical journal = Xianggang yi xue za zhi 17(1): 33-8	- Non-OECD country - Not a relevant study design *Consecutive case series*
Choi, Chang Il, Kang, Minyong, Sung, Hyun Hwan et al. (2018) Oncologic Outcomes of Cytoreductive Nephrectomy in Synchronous Metastatic Renal-Cell Carcinoma: A Single-Center Experience. Clinical genitourinary cancer 16(6): e1189-e1199	- Mixed population of SACT pre/post non-pharmacological regimens *All participants received SACT. Not sufficient information to know the timeline of SACT.*
Choi, J.D., Park, J.W., Lee, H.W. et al. (2013) A comparison of surgical and functional outcomes of robot-assisted versus pure laparoscopic partial nephrectomy. Journal of the Society of Laparoendoscopic Surgeons 17(2): 292-299	- Exclude, review C. Study included only patients T1-T2
Choi, J.E., You, J.H., Kim, D.K. et al. (2015) Comparison of perioperative outcomes between robotic and laparoscopic partial nephrectomy: A systematic review and meta-analysis. European Urology 67(5): 891-901	- Exclude, review C. Patients with localised tumour
Choi, Se Young, Ha, Moon Soo, Lee, Jeong Woo et al. (2023) Shifting role of cytoreductive nephrectomy according to type of systemic therapy: A nationwide cohort study. Asian journal of surgery 46(1): 328-336	- Mixed population of SACT pre/post non-pharmacological regimens *All participants received SACT. Not sufficient information to know the timeline of SACT.*
Choi, Se Young, Jung, Han, You, Dalsan et al. (2019) Robot-assisted partial nephrectomy is associated with early recovery of renal function: Comparison of open, laparoscopic, and robot-assisted partial nephrectomy using DTPA renal scintigraphy. Journal of surgical oncology 119(7): 1016-1023	- There is no information on cT or pT stage
Chung, Doo Yong, Kang, Dong Hyuk, Kim, Jong Won et al. (2020) Comparison of oncologic outcomes between partial nephrectomy and radical nephrectomy in patients who were upstaged from cT1 renal tumor to pT3a renal cell carcinoma: an updated systematic review and	- Comparator in study does not match that specified in protocol *PN vs RN for upstaged pT3 tumour*

Study	Reason
meta-analysis. Therapeutic advances in urology 12: 1756287220981508	
Chung, Jae-Seung, Son, Nak Hoon, Lee, Sang Eun et al. (2018) Partial versus Radical Nephrectomy for T1-T2 Renal Cell Carcinoma in Patients with Chronic Kidney Disease Stage III: a Multiinstitutional Analysis of Kidney Function and Survival Rate. Journal of Korean medical science 33(43): e277	- More recent systematic review included that covers the same topic *already included by Ochoa but also reports HR in people with CKD 30 ≤ eGFR < 60 in table 2 Looks like Ochoa only included new onset CKD which is why they've only used the stage i-iii values - can exclude*
Cinar, O., Bolat, M.S., Cicek, M.C. et al. (2020) Experiences of Laparoscopic Partial Nephrectomy for T1a Kidney Tumours: Results of Two Hundred and Fifteen Patients. Bulletin of Urooncology 19(3): 130-135	- Exclude, review C- Study included only patients T1-T2
Colombo, Jose R Jr, Haber, Georges-Pascal, Jelovsek, John E et al. (2008) Seven years after laparoscopic radical nephrectomy: oncologic and renal functional outcomes. Urology 71(6): 1149-54	- Exclude - For review C. Proportion of patients stage T3 < 90%
Correa, Rohann J M, Louie, Alexander V, Zaorsky, Nicholas G et al. (2019) The Emerging Role of Stereotactic Ablative Radiotherapy for Primary Renal Cell Carcinoma: A Systematic Review and Meta-Analysis. European urology focus 5(6): 958-969	- More recent systematic review included that covers the same topic
Cotta, Brittney H, Meagher, Margaret F, Patil, Dattatraya et al. (2021) Elevated preoperative C-reactive protein is associated with renal functional decline and non-cancer mortality in surgically treated renal cell carcinoma: analysis from the INternational Marker Consortium for Renal Cancer (INMARC). BJU international 127(3): 311-317	- Primary study covered fully by an included systematic review
Crocerossa, Fabio, Autorino, Riccardo, Derweesh, Ithaar et al. (2023) Management of renal cell carcinoma in transplant kidney: a systematic review and meta-analysis. Minerva urology and nephrology 75(1): 1-16	- Does not contain a population of people with kidney cancer *Transplanted kidneys only*
Crocerossa, Fabio, Carbonara, Umberto, Cantiello, Francesco et al. (2021) Robot-assisted Radical Nephrectomy: A Systematic Review and	- Exclude - For review C. Proportion of patients stage T3 < 90%

Study	Reason
Meta-analysis of Comparative Studies. European urology 80(4): 428-439	
Culp, Stephen H, Tannir, Nizar M, Abel, E Jason et al. (2010) Can we better select patients with metastatic renal cell carcinoma for cytoreductive nephrectomy?. Cancer 116(14): 3378-88	- Mixed population of SACT pre/post non-pharmacological regimens *All participants received SACT. Not sufficient information to know the timeline of SACT received before or after CN.*
Dabestani, Saeed, Marconi, Lorenzo, Hofmann, Fabian et al. (2014) Local treatments for metastases of renal cell carcinoma: a systematic review. The Lancet. Oncology 15(12): e549-61	- Mixed population of SACT pre/post non-pharmacological regimens
Dahm, P., Ergun, O., Uhlig, A. et al. (2024) Cytoreductive nephrectomy in metastatic renal cell carcinoma. Cochrane Database of Systematic Reviews 2024(6): cd013773	- Systematic review used as source of primary studies
Dahm, Philipp, Ergun, Onuralp, Uhlig, Annemarie et al. (2024) Cytoreductive nephrectomy in metastatic renal cell carcinoma. The Cochrane database of systematic reviews 6: cd013773	- Duplicate reference
Danzig, Matthew R, Ghandour, Rashed A, Chang, Peter et al. (2015) Active Surveillance is Superior to Radical Nephrectomy and Equivalent to Partial Nephrectomy for Preserving Renal Function in Patients with Small Renal Masses: Results from the DISSRM Registry. The Journal of urology 194(4): 903-9	- Primary study covered fully by an included systematic review
Dariane, Charles; Timsit, Marc-Olivier; Mejean, Arnaud (2018) Position of cytoreductive nephrectomy in the setting of metastatic renal cell carcinoma patients: does the CARMENA trial lead to a paradigm shift?. Bulletin du cancer 105suppl3: 229-s234	- Systematic review used as source of primary studies
Das, Manoj K, Rohith, Gorrepati, Mandal, Swarnendu et al. (2024) Intraoperative ultrasonography (IOUS)-guided vs conventional laparoscopic nephrectomy: a randomised control trial. BJU international 133(1): 71-78	- Exclude - Intervention is out of scope
Dash, A., Vickers, A.J., Schachter, L.R. et al. (2006) Comparison of outcomes in elective partial vs radical nephrectomy for clear cell renal cell carcinoma of 4-7 cm. BJU International 97(5): 939-945	- For RQ3a Study published before 2016 (search date for disease-free survival)

Study	Reason
de Bruijn, Roderick, Wimalasingham, Akhila, Szabados, Bernadett et al. (2020) Deferred Cytoreductive Nephrectomy Following Presurgical Vascular Endothelial Growth Factor Receptor-targeted Therapy in Patients with Primary Metastatic Clear Cell Renal Cell Carcinoma: A Pooled Analysis of Prospective Trial Data. European urology oncology 3(2): 168-173	- Systematic review used as source of primary studies
De Gobbi, Alberto, Biasoni, Davide, Catanzaro, Mario et al. (2018) Surgery of locally advanced and metastatic kidney cancer after tyrosine kinase inhibitors therapy: single institute experience. Tumori 104(5): 388-393	- Not a relevant study design *observational study*
de Saint Aubert, N, Audenet, F, Mccaig, F et al. (2018) Nephron sparing surgery in tumours greater than 7cm. Progres en urologie : journal de l'Association francaise d'urologie et de la Societe francaise d'urologie 28(6): 336-343	- Primary study covered fully by an included systematic review
Deka, H., Medam, N.M., Ginil Kumar, P. et al. (2024) Comparison of Trifecta and Pentafecta Outcomes across 3 Surgical Modalities of Partial Nephrectomy (PN) - Open, Lap, and Robotic. Journal of Kidney Cancer and VHL 11(3): 27	- Exclude - For review C. Proportion of patients stage T3 < 90%
Deng, Huan, Fan, Yan, Yuan, Feifei et al. (2021) Partial nephrectomy provides equivalent oncologic outcomes and better renal function preservation than radical nephrectomy for pathological T3a renal cell carcinoma: A meta-analysis. International braz j urol : official journal of the Brazilian Society of Urology 47(1): 46-60	- Comparator in study does not match that specified in protocol *Compares RN vs PN for T3 tumours*
Deng, Wen, Chen, Luyao, Wang, Yibing et al. (2019) Cryoablation versus Partial Nephrectomy for Clinical Stage T1 Renal Masses: A Systematic Review and Meta-Analysis. Journal of Cancer 10(5): 1226-1236	- More recent systematic review included that covers the same topic
Deng, Wen, Zhou, Zhengtao, Zhong, Jian et al. (2020) Retroperitoneal laparoscopic partial versus radical nephrectomy for large (>= 4 cm) and anatomically complex renal tumors: A propensity score matching study. European journal of surgical oncology : the journal of the European Society of Surgical Oncology and the British	- Non-OECD country

Study	Reason
Association of Surgical Oncology 46(7): 1360-1365	
Dengina, N., Mitin, T., Gamayunov, S. et al. (2019) Stereotactic body radiation therapy in combination with systemic therapy for metastatic renal cell carcinoma: A prospective multicentre study. ESMO Open 4(5): e000535	- Not a relevant study design
Desideri, I, Francolini, G, Scotti, V et al. (2019) Benefit of ablative versus palliative-only radiotherapy in combination with nivolumab in patients affected by metastatic kidney and lung cancer. Clinical & translational oncology : official publication of the Federation of Spanish Oncology Societies and of the National Cancer Institute of Mexico 21(7): 933-938	- Does not contain a population of people with kidney cancer *Mix of non-small cell lung cancer and RCC. No separate results for participants with RCC reported.No comparator groupParticipants received RT and SACT simultaneously. Or RT given at least 60 days after the last does of SACT.*
Dillenburg, Wolfgang, Poulakis, Vassilis, Skriapas, Konstantinos et al. (2006) Retroperitoneoscopic versus open surgical radical nephrectomy for large renal cell carcinoma in clinical stage cT2 or cT3a: quality of life, pain and reconvalescence. European urology 49(2): 314-3	- Exclude - For review C. Proportion of patients stage T3 < 90%
Dong, Bao Nan, Song, Jie, Yang, Wen Li et al. (2024) Comparison of Outcomes Between Partial and Radical Laparoscopic Nephrectomy for Localized Renal Tumors Larger Than Four Centimeters: A Systematic Review and Meta-Analysis. World journal of oncology 15(4): 625-639	- Systematic review with case control studies
Dong, Hanzhi, Cao, Yuan, Jian, Yan et al. (2023) Patients with metastatic renal cell carcinoma who receive immune-targeted therapy may derive survival benefit from nephrectomy. BMC cancer 23(1): 943	- Study does not contain a relevant intervention *Compares SACT vs. non pharma (nephrectomy). Only 40% of the patients in the nephrectomy arm underwent CN with rest of them arm receiving radical nephrectomy. No subgroup data available.*
Dong, Lin, Liang, Wang You, Ya, Lu et al. (2022) A Systematic Review and Meta-Analysis of Minimally Invasive Partial Nephrectomy Versus Focal Therapy for Small Renal Masses. Frontiers in oncology 12: 732714	- Does not contain a population of people with kidney cancer *SR focussing on small renal masses*
Dragomir, Alice, Nazha, Sara, Wood, Lori A et al. (2020) Outcomes of complete metastasectomy in metastatic renal cell carcinoma patients: The Canadian Kidney Cancer information system	- Study does not contain a relevant intervention *compares mastectomy Vs. no mastectomy. No information regarding the use of SACT prior or during the mastectomy is given. Baseline data*

Study	Reason
experience. Urologic oncology 38(10): 799e1-799e10	*reports percentage of patients used SCAT during follow-up, which can not be used to determine the timeline of SCAT*
El-Ghazaly, Tarek H; Mason, Ross J; Rendon, Ricardo A (2014) Oncological outcomes of partial nephrectomy for tumours larger than 4 cm: A systematic review. Canadian Urological Association journal = Journal de l'Association des urologues du Canada 8(12): 61-6	- There is no information on cT or pT stage
Ellis, E.E. and Messing, E. (2021) Active Surveillance of Small Renal Masses: A Systematic Review. Kidney Cancer 5(3): 139-152	- More recent systematic review included that covers the same topic
Ellison, Jonathan S, Montgomery, Jeffrey S, Wolf, J Stuart Jr et al. (2012) A matched comparison of perioperative outcomes of a single laparoscopic surgeon versus a multisurgeon robot-assisted cohort for partial nephrectomy. The Journal of urology 188(1): 45-50	- Exclude - For review C. Proportion of patients stage T3 < 90%
Enikeev, Dmitry, Morozov, Andrey, Bazarkin, Andrey et al. (2023) Thermal ablation vs. active surveillance for renal masses: a systematic review and network meta-analysis. Minerva urology and nephrology 75(2): 154-162	- More recent systematic review included that covers the same topic *Reports unadjusted outcomes only*
Ergun, Muslum, Sagir, Suleyman, Akyuz, Osman et al. (2024) Evolving Approach in Nephron-Sparing Surgery: Has Anything Changed from Open Surgery to Laparoscopy?. Archivos espanoles de urologia 77(7): 726-731	- Exclude - review C. Patients with localised tumour
Faddegon, Stephen, Ju, Tom, Olweny, Ephrem O et al. (2013) A comparison of long term renal functional outcomes following partial nephrectomy and radiofrequency ablation. The Canadian journal of urology 20(3): 6785-9	- Study published before included SR/s for the outcome/s reported
Faiena, Izak, Salmasi, Amirali, Lenis, Andrew T et al. (2018) Overall survival in patients with metastatic renal cell carcinoma and clinical N1 disease undergoing cytoreductive nephrectomy and lymph node dissection. Urologic oncology 36(2): 79e19-79e26	- Study does not contain a relevant intervention *Compares lymphadenectomy vs. No lymphadenectomy. All had previously received CN, no information of background use of SACT given. No additional sub-group analysis*
Fallah, Jaleh, Gittleman, Haley, Weinstock, Chana et al. (2024) Cytoreductive nephrectomy in the era of immune checkpoint inhibitors: a US	- Exclude - Intervention is out of scope *Pooled analysis of trials comparing pharmaceuticals only.*

Study	Reason
Food and Drug Administration pooled analysis. Journal of the National Cancer Institute 116(7): 1043-1050	
Feder, Marc T, Patel, Manoj B, Melman, Arnold et al. (2008) Comparison of open and laparoscopic nephrectomy in obese and nonobese patients: outcomes stratified by body mass index. The Journal of urology 180(1): 79-83	- Exclude - For review C. Proportion of patients stage T3 < 90%
Feuerstein, Michael A, Kent, Matthew, Bazzi, Wassim M et al. (2014) Analysis of lymph node dissection in patients with >=7-cm renal tumors. World journal of urology 32(6): 1531-6	- Comparator in study does not match that specified in protocol - Study did not compare the interventions of interest
Feuerstein, Michael A, Kent, Matthew, Bernstein, Melanie et al. (2014) Lymph node dissection during cytoreductive nephrectomy: a retrospective analysis. International journal of urology : official journal of the Japanese Urological Association 21(9): 874-9	- Study does not contain a relevant intervention *Compares lymphadenectomy vs. No lymphadenectomy. All had previously received CN, no information of background use of SACT given.*
Ficarra, V., Crestani, A., Inferrera, A. et al. (2018) Positive surgical margins after partial nephrectomy: A systematic review and meta-analysis of comparative studies. Kidney Cancer 2(2): 133-145	- Exclude - assessed outcome is out of scope
Ficarra, Vincenzo, Minervini, Andrea, Antonelli, Alessandro et al. (2014) A multicentre matched-pair analysis comparing robot-assisted versus open partial nephrectomy. BJU international 113(6): 936-41	- Exclude, review C. Study included only patients T1-T2
Figaroa, Orlane, Zondervan, Patricia, Kessels, Rob et al. (2024) PrimerX: A Bayesian Multistage Cohort Embedded Randomised Trial to Evaluate the Role of Deferred Local Therapy of the Primary Tumour in Combination with Immune Checkpoint Inhibitor-based First-line Therapy in Metastatic Renal Cell Carcinoma Patients. European urology open science 70: 28-35	- Comparator in study does not match that specified in protocol *People in the comparator group were allowed to receive deferred CN if primary tumour was progressing*
Fossati, Nicola, Larcher, Alessandro, Gadda, Giulio M et al. (2015) Minimally Invasive Partial Nephrectomy Versus Laparoscopic Cryoablation for Patients Newly Diagnosed with a Single Small Renal Mass. European urology focus 1(1): 66-72	- Primary study covered fully by an included systematic review

Study	Reason
Franzese, Ciro, Marini, Beatrice, Baldaccini, Davide et al. (2023) The impact of stereotactic ablative radiotherapy on oligoprogressive metastases from renal cell carcinoma. Journal of cancer research and clinical oncology 149(8): 4411-4417	- Review H, SABR exclude *All patients received active SCAT during SABR*
Franzese, Ciro, Marvaso, Giulia, Francolini, Giulio et al. (2021) The role of stereotactic body radiation therapy and its integration with systemic therapies in metastatic kidney cancer: a multicenter study on behalf of the AIRO (Italian Association of Radiotherapy and Clinical Oncology) genitourinary study group. Clinical & experimental metastasis 38(6): 527-537	- Review H, SABR exclude
Gandi, C., Totaro, A., Bientinesi, R. et al. (2022) Purely Off-Clamp Partial Nephrectomy: Robotic Approach Better than Open Using a Pentafecta Outcome with Propensity Score Matching. Journal of Clinical Medicine 11(21): 6241	- Exclude - For review C. Proportion of patients stage T3 < 90%
Gao, HuiYu, Zhou, Lin, Zhang, JiaBin et al. (2024) Comparative efficacy of cryoablation versus robot-assisted partial nephrectomy in the treatment of cT1 renal tumors: a systematic review and meta-analysis. BMC cancer 24(1): 1150	- Systematic review used as source of primary studies
Gao, X., Hu, L., Pan, Y. et al. (2018) Surgical outcomes of nephrectomy for elderly patients with renal cell carcinoma. Pakistan Journal of Medical Sciences 34(2): 288-293	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*
Garcia-Perdomo, Herney A; Zapata-Copete, James A; Castillo-Cobaleda, Diego F (2018) Role of cytoreductive nephrectomy in the targeted therapy era: A systematic review and meta-analysis. Investigative and clinical urology 59(1): 2-9	- Exclude - Result reported in the most updated MA
Garg, Harshit, Das, Bhabatosh, Bansal, Amit et al. (2022) Trifecta and Pentafecta Outcomes in Laparoscopic and Robotic Nephron-Sparing Surgery for Highly Complex Renal Tumors: A Propensity Score-Matched Cohort Analysis. Journal of endourology 36(8): 1050-1056	- Exclude, review C- Study included only patients T1-T2

Study	Reason
Garg, Harshit, Tiwari, Deviprasad, Nayak, Brusabhanu et al. (2020) A comparative analysis of various surgical approaches of nephron-sparing surgery and correlation of histopathological grade with RENAL nephrometry score in renal cell carcinoma. Journal of minimal access surgery 16(2): 144-151	- Exclude, review C. Study included only patients T1-T2
Garisto, Juan, Bertolo, Riccardo, Dagenais, Julien et al. (2018) Robotic versus open partial nephrectomy for highly complex renal masses: Comparison of perioperative, functional, and oncological outcomes. Urologic oncology 36(10): 471e1-471e9	- Exclude, review C. Study included only patients T1-T2
Ge, Si, Wang, Zuoping, Li, Yunxiang et al. (2025) Is Ablation Suitable For Small Renal Masses? A Meta-Analysis. Academic radiology 32(1): 218-235	- Systematic review used as source of primary studies
Gebbia, Vittorio, Girlando, Andrea, DI Grazia, Alfio et al. (2020) Stereotactic Radiotherapy for the Treatment of Patients With Oligo-progressive Metastatic Renal Cell Carcinoma Receiving Vascular Endothelial Growth Factor Receptor Tyrosine Kinase Inhibitor: Data From the Real World. Anticancer research 40(12): 7037-7043	- Review H, SABR exclude *All participants received concomitant SACT*
Gershman, Boris, Moreira, Daniel M, Thompson, R Houston et al. (2018) Perioperative Morbidity of Lymph Node Dissection for Renal Cell Carcinoma: A Propensity Score-based Analysis. European urology 73(3): 469-475	- Comparator in study does not match that specified in protocol
Gershman, Boris, Thompson, R Houston, Boorjian, Stephen A et al. (2018) Radical Nephrectomy with or without Lymph Node Dissection for High Risk Nonmetastatic Renal Cell Carcinoma: A Multi-Institutional Analysis. The Journal of urology 199(5): 1143-1148	- Exclude - For Review C Proportion of patients stage T3 < 90% - Comparator in study does not match that specified in protocol *LND vs no LND*
Gershman, Boris, Thompson, R Houston, Moreira, Daniel M et al. (2017) Lymph Node Dissection is Not Associated with Improved Survival among Patients Undergoing Cytoreductive Nephrectomy for Metastatic Renal Cell Carcinoma: A Propensity Score Based Analysis. The Journal of urology 197(3pt1): 574-579	- Mixed population of SACT pre/post non-pharmacological regimens - Study does not contain a relevant intervention *Compares CN with lymphadenectomy vs. CN without lymphadenectomy.Mixed population with pre and post non-pharmacological treatment.*

Study	Reason
Gershman, Boris, Thompson, R Houston, Moreira, Daniel M et al. (2017) Radical Nephrectomy With or Without Lymph Node Dissection for Nonmetastatic Renal Cell Carcinoma: A Propensity Score-based Analysis. European urology 71(4): 560-567	- Comparator in study does not match that specified in protocol *LND vs no LND*
Ghani, Khurshid R, Sukumar, Shyam, Sammon, Jesse D et al. (2014) Practice patterns and outcomes of open and minimally invasive partial nephrectomy since the introduction of robotic partial nephrectomy: results from the nationwide inpatient sample. The Journal of urology 191(4): 907-12	- There is no information on cT or pT stage
Gill, Inderbir S, Matin, Surena F, Desai, Mihir M et al. (2003) Comparative analysis of laparoscopic versus open partial nephrectomy for renal tumors in 200 patients. The Journal of urology 170(1): 64-8	- Exclude - For review C. Proportion of patients stage T3 < 90%
Golombos, D.M., Chughtai, B., Trinh, Q.-D. et al. (2017) Adoption of technology and its impact on nephrectomy outcomes, a U.S. population-based analysis (2008-2012). Journal of Endourology 31(1): 91-99	- Exclude - For review C. Proportion of patients stage T3 < 90%
Golombos, David M, Chughtai, Bilal, Trinh, Quoc-Dien et al. (2017) Minimally invasive vs open nephrectomy in the modern era: does approach matter?. World journal of urology 35(10): 1557-1568	- Exclude - For review C. Proportion of patients stage T3 < 90% *Reported as stage 3*
Gonzalez-Ruiz de Leon, C., Pellejero-Perez, P., Quintas-Blanco, A. et al. (2017) Beneficio de la nefrectomia en el tratamiento del carcinoma de celulas renales metastasico, Benefit of on nephrectomy for treating metastatic renal cell carcinoma. Actas urologicas espanolas 41(5): 338-342	- Exclude - non-English paper
Graham, Jeffrey, Wells, J Connor, Donskov, Frede et al. (2019) Cytoreductive Nephrectomy in Metastatic Papillary Renal Cell Carcinoma: Results from the International Metastatic Renal Cell Carcinoma Database Consortium. European urology oncology 2(6): 643-648	- Exclude - Result reported in the most updated MA

Study	Reason
Green, Harshani; Taylor, Alexandra; Khoo, Vincent (2023) Beyond the Knife in Renal Cell Carcinoma: A Systematic Review-To Ablate or Not to Ablate?. Cancers 15(13)	- More recent systematic review included that covers the same topic
Grimaud, L.W., Chen, F.V., Chang, J. et al. (2021) Comparison of Perioperative Outcomes for Radical Nephrectomy Based on Surgical Approach for Masses Greater Than 10 cm. Journal of Endourology 35(12): 1785-1792	- Exclude - For review C. Proportion of patients stage T3 < 90% *Study excluded cT3b-4 disease*
Grimm, Marc-Oliver, Oya, Mototsugu, Choueiri, Toni K et al. (2024) Impact of Prior Cytoreductive Nephrectomy on Efficacy in Patients with Synchronous Metastatic Renal Cell Carcinoma Treated with Avelumab plus Axitinib or Sunitinib: Post Hoc Analysis from the JAVELIN Renal 101 Phase 3 Trial. European urology 85(1): 8-12	- Not a relevant study design
Grivas, Nikolaos, Kalampokis, Nikolaos, Larcher, Alessandro et al. (2019) Robot-assisted versus open partial nephrectomy: comparison of outcomes. A systematic review. Minerva urologica e nefrologica = The Italian journal of urology and nephrology 71(2): 113-120	- Exclude - For review C. Proportion of patients stage T3 < 90%
Gross, Evan E, Li, Mingjia, Yin, Ming et al. (2023) A multicenter study assessing survival in patients with metastatic renal cell carcinoma receiving immune checkpoint inhibitor therapy with and without cytoreductive nephrectomy. Urologic oncology 41(1): 51e25-51e31	- Mixed population of SACT pre/post non-pharmacological regimens
Gu, Liangyou, Liu, Kan, Shen, Donglai et al. (2020) Comparison of Robot-Assisted and Laparoscopic Partial Nephrectomy for Completely Endophytic Renal Tumors: A High-Volume Center Experience. Journal of endourology 34(5): 581-587	- Exclude review C. Study included only patients T1-T2
Gu, Liangyou, Ma, Xin, Gao, Yu et al. (2017) Robotic versus Open Level I-II Inferior Vena Cava Thrombectomy: A Matched Group Comparative Analysis. The Journal of urology 198(6): 1241-1246	- Non-OECD country
Gu, Liangyou, Ma, Xin, Wang, Baojun et al. (2018) Laparoscopic vs robot-assisted partial nephrectomy for renal tumours of >4 cm: a	- Exclude - For review C. Proportion of patients stage T3 < 90%

Study	Reason
propensity score-based analysis. BJU international 122(3): 449-455	
Guan, Wei, Bai, Jian, Liu, Jihong et al. (2012) Microwave ablation versus partial nephrectomy for small renal tumors: intermediate-term results. Journal of surgical oncology 106(3): 316-21	- Non-OECD country
Guglielmetti, Giuliano B, Dos Anjos, Gabriel C, Sawczyn, Guilherme et al. (2022) A Prospective, Randomized Trial Comparing the Outcomes of Open vs Laparoscopic Partial Nephrectomy. The Journal of urology 208(2): 259-267	- Exclude - For review C. Proportion of patients stage T3 < 90%
Guillotreau, Julien, Haber, Georges-Pascal, Autorino, Riccardo et al. (2012) Robotic partial nephrectomy versus laparoscopic cryoablation for the small renal mass. European urology 61(5): 899-904	- Primary study covered fully by an included systematic review
Guner, E. and Sahin, S. (2019) Comparison of robotic and laparoscopic partial nephrectomy in robotic surgery era. Bulletin of Urooncology 18(4): 154-157	- There is no information on cT or pT stage
Guo, Run-Qi, Peng, Jin-Zhao, Sun, Jie et al. (2024) Comparing Oncologic Outcomes of Heat-Based Thermal Ablation and Cryoablation in Patients With T1a Renal Cell Carcinoma: A Population-Based Cohort Study From the SEER Database. Korean journal of radiology 25(12): 1061-1069	- Compares two types of ablation
Gupta, K., Omil-Lima, D., Sheyn, D. et al. (2021) Temporal improvements in renal surgery outcomes across surgical approaches. International Urology and Nephrology 53(7): 1311-1316	- Study does not contain a relevant outcome
Haber, Georges-Pascal, White, Wesley M, Crouzet, Sebastien et al. (2010) Robotic versus laparoscopic partial nephrectomy: single-surgeon matched cohort study of 150 patients. Urology 76(3): 754-8	- Not a relevant study design *Consecutive case series*
Hahn, Andrew W, Kotecha, Ritesh R, Viscuse, Paul V et al. (2023) Cytoreductive Nephrectomy for Patients with Metastatic Sarcomatoid and/or Rhabdoid Renal Cell Carcinoma Treated with	- Mixed population of SACT pre/post non-pharmacological regimens

Study	Reason
Immune Checkpoint Therapy. European urology focus 9(5): 734-741	
Hakam, Nizar, Heidar, Nassib Abou, El-Asmar, Jose et al. (2023) Comparative analysis of partial versus radical nephrectomy for renal cell carcinoma: Is oncologic safety compromised during nephron sparing in higher stage disease?. Urology annals 15(2): 226-231	- Non-OECD country
Hall, Mary E, Bhindi, Bimal, Luckenbaugh, Amy N et al. (2021) Association between cytoreductive nephrectomy and survival among patients with metastatic renal cell carcinoma receiving modern therapies: a systematic review and meta-analysis examining effect modification according to systemic therapy approach. Cancer causes & control : CCC 32(7): 675-680	- Mixed population of SACT pre/post non-pharmacological regimens
Haramis, Georgios, Graversen, Joseph A, Mues, Adam C et al. (2012) Retrospective comparison of laparoscopic partial nephrectomy versus laparoscopic renal cryoablation for small (<3.5 cm) cortical renal masses. Journal of laparoendoscopic & advanced surgical techniques. Part A 22(2): 152-7	- Primary study covered fully by an included systematic review
Harke, N.N., Mandel, P., Witt, J.H. et al. (2018) Are there limits of robotic partial nephrectomy? TRIFECTA outcomes of open and robotic partial nephrectomy for completely endophytic renal tumors. Journal of Surgical Oncology 118(1): 206-211	- Not a relevant study design *Consecutive case series*
Harryman, O.A., Davenport, K., Keoghane, S. et al. (2009) A Comparative Study of Quality of Life Issues Relating to Open Versus Laparoscopic Nephrectomy: A Prospective Pragmatic Study. Journal of Urology 181(3): 998-1003	- There is no information on cT or pT stage
Harshman, Lauren C, Yu, R James, Allen, Genevera I et al. (2013) Surgical outcomes and complications associated with presurgical tyrosine kinase inhibition for advanced renal cell carcinoma (RCC). Urologic oncology 31(3): 379-85	- Not a relevant study design *Reports case series*
Hatayama, Tomoya, Tasaka, Ryo, Mochizuki, Hideki et al. (2022) Comparison of surgical	- There is no information on cT or pT stage

Study	Reason
outcomes and split renal function between laparoscopic and robot-assisted partial nephrectomy: a propensity score-matched analysis. International urology and nephrology 54(4): 805-811	
He, Liru, Liu, Yang, Han, Hui et al. (2020) Survival Outcomes After Adding Stereotactic Body Radiotherapy to Metastatic Renal Cell Carcinoma Patients Treated With Tyrosine Kinase Inhibitors. American journal of clinical oncology 43(1): 58-63	- Review H. SABR exclude *SABR and SACT given concomitantly*
Health Technology, Wales (2022) Stereotactic ablative radiotherapy (SABR) for the treatment of renal cell carcinoma.	- Systematic review used as source of primary studies
Heng, Daniel Y C, Wells, J Connor, Rini, Brian I et al. (2014) Cytoreductive nephrectomy in patients with synchronous metastases from renal cell carcinoma: results from the International Metastatic Renal Cell Carcinoma Database Consortium. European urology 66(4): 704-10	- Mixed population of SACT pre/post non-pharmacological regimens *Unclear if participants received SACT before or during or after the CN*
Hoeh, Benedikt, Wenzel, Mike, Eckart, Olivia et al. (2023) Comparison of peri- and intraoperative outcomes of open vs robotic-assisted partial nephrectomy for renal cell carcinoma: a propensity-matched analysis. World journal of surgical oncology 21(1): 189	- Exclude - For review C. Proportion of patients stage T3 < 90%
Hong, Xuwei, Li, Fei, Tang, Kaiqiang et al. (2016) Prognostic value of cytoreductive nephrectomy combined with targeted therapy for metastatic renal cell carcinoma: a meta-analysis. International urology and nephrology 48(6): 967-75	- Exclude - Result reported in the most updated MA
Hori, Shunta, Sakamoto, Keiichi, Onishi, Kenta et al. (2023) Perioperative outcomes of open and robot-assisted partial nephrectomy in patients with renal tumors of moderate to high complexity. Asian journal of surgery 46(6): 2310-2318	- Exclude - review C. Patients with localised tumour
Hsieh, Po-Yen, Hung, Sheng-Chun, Li, Jian-Ri et al. (2021) The effect of metastasectomy on overall survival in metastatic renal cell carcinoma: A systematic review and meta-analysis. Urologic oncology 39(7): 422-430	- Non-OECD country

Study	Reason
Hu, Xu, Wang, Yaohui, Shao, Yanxiang et al. (2023) Radical versus partial nephrectomy for T1 non-clear cell renal cell carcinoma. European journal of surgical oncology : the journal of the European Society of Surgical Oncology and the British Association of Surgical Oncology 49(8): 1519-1523	- SEER database overlap
Huang, Jiwei, Zhang, Jin, Wang, Yanqing et al. (2016) Comparing Zero Ischemia Laparoscopic Radio Frequency Ablation Assisted Tumor Enucleation and Laparoscopic Partial Nephrectomy for Clinical T1a Renal Tumor: A Randomized Clinical Trial. The Journal of urology 195(6): 1677-83	- Study does not contain a relevant intervention *Radio frequency ablation group also had tumour enucleation*
Huang, Ryan S, Chow, Ronald, Benour, Ali et al. (2025) Comparative efficacy and safety of ablative therapies in the management of primary localised renal cell carcinoma: a systematic review and meta-analysis. The Lancet. Oncology	- Data not reported in an extractable format
Hutchinson, Ryan, Singla, Nirmish, Krabbe, Laura-Maria et al. (2017) Increased use of antihypertensive medications after partial nephrectomy vs. radical nephrectomy. Urologic oncology 35(11): 660e17-660e25	- Primary study covered fully by an included systematic review
Iisager, Laura, Ahrenfeldt, Johanne, Donskov, Frede et al. (2024) Multicenter randomized trial of deferred cytoreductive nephrectomy in synchronous metastatic renal cell carcinoma receiving checkpoint inhibitors: the NORDIC-SUN-Trial. BMC cancer 24(1): 260	- study protocol
Ingels, A, Bensalah, K, Beauval, J B et al. (2022) Comparison of open and robotic-assisted partial nephrectomy approaches using multicentric data (UroCCR-47 study). Scientific reports 12(1): 18981	- Exclude - For review C. Proportion of patients stage T3 < 90%
Ingrosso, Gianluca, Becherini, Carlotta, Francolini, Giulio et al. (2021) Stereotactic body radiotherapy (SBRT) in combination with drugs in metastatic kidney cancer: A systematic review. Critical reviews in oncology/hematology 159: 103242	- Systematic review used as source of primary studies

Study	Reason
Izol, Volkan, Gokalp, Fatih, Sozen, Sinan et al. (2021) Factors affecting long-term renal functions after partial vs radical nephrectomy for clinical T1 renal masses: A Multicentre Study of the Urooncology Association, Turkey. International journal of clinical practice 75(5): e13960	- More recent systematic review included that covers the same topic *'requirement of dialysis' could mean eGFR <15see rec 1.1.3 within NG107also from Ochoa:"Due to the heterogeneity of defining CKD across studies, we pooled the studies for stages III-V or IV-V as determined by the EGFR or by renal replacement therapy and kidney transplant"Not included in Ochoa most likely because data not reported as HR/OR - to exclude*
Jang, Hoon Ah, Kim, Jin Wook, Byun, Seok Soo et al. (2016) Oncologic and Functional Outcomes after Partial Nephrectomy Versus Radical Nephrectomy in T1b Renal Cell Carcinoma: A Multicenter, Matched Case-Control Study in Korean Patients. Cancer research and treatment 48(2): 612-20	- Primary study covered fully by an included systematic review
Jang, Hyeon Jun, Song, Wan, Suh, Yoon Seok et al. (2014) Comparison of perioperative outcomes of robotic versus laparoscopic partial nephrectomy for complex renal tumors (RENAL nephrometry score of 7 or higher). Korean journal of urology 55(12): 808-13	- There is no information on cT or pT stage
Janisch, Florian, Hillemacher, Tobias, Fuehner, Constantin et al. (2020) The impact of cytoreductive nephrectomy on survival outcomes in patients treated with tyrosine kinase inhibitors for metastatic renal cell carcinoma in a real-world cohort. Urologic oncology 38(9): 739e9-739e15	- Data not reported in an extractable format *Reports OS, PFS and CSS as median months*
Jelley, C.R., Kurukulaarachchi, K.A.S.H., Forster, L. et al. (2017) Comparison of open and robotic nephron sparing surgery: a single centre experience. Journal of Clinical Urology 10(1): 28-35	- Exclude, review C. Study included only patients T1-T2
Jeon, Hwang Gyun, Jeong, In Gab, Lee, Jeong Woo et al. (2009) Prognostic factors for chronic kidney disease after curative surgery in patients with small renal tumors. Urology 74(5): 1064-8	- Primary study covered fully by an included systematic review
Jeong, In Gab, Khandwala, Yash S, Kim, Jae Heon et al. (2017) Association of Robotic-Assisted vs Laparoscopic Radical Nephrectomy With Perioperative Outcomes and Health Care Costs, 2003 to 2015. JAMA 318(16): 1561-1568	- There is no information on cT or pT stage

Study	Reason
Jeong, Seung-Hwan, Kim, Jung Kwon, Park, Juhyun et al. (2016) Pathological T3a Upstaging of Clinical T1 Renal Cell Carcinoma: Outcomes According to Surgical Technique and Predictors of Upstaging. PloS one 11(11): e0166183	- Comparator in study does not match that specified in protocol
Ji, B., Li, D., Fu, S. et al. (2020) Propensity-score matched comparison of partial versus radical nephrectomy for T1N0M0 sarcomatoid renal cell carcinoma. Translational Andrology and Urology 9(2): 250-257	- SEER database overlap
Ji, Changwei, Zhao, Xiaozhi, Zhang, Shiwei et al. (2016) Laparoscopic Radiofrequency Ablation versus Partial Nephrectomy for cT1a Renal Tumors: Long-Term Outcome of 179 Patients. Urologia internationalis 96(3): 345-53	- Non-OECD country
Jiang, Jianping, Zheng, Xiangyi, Qin, Jie et al. (2009) Health-related quality of life after hand-assisted laparoscopic and open radical nephrectomies of renal cell carcinoma. International urology and nephrology 41(1): 23-7	- Exclude - For review C. Proportion of patients stage T3 < 90%
Jiang, Yu-Li, Peng, Cheng-Xia, Wang, Heng-Zi et al. (2019) Comparison of the long-term follow-up and perioperative outcomes of partial nephrectomy and radical nephrectomy for 4 cm to 7 cm renal cell carcinoma: a systematic review and meta-analysis. BMC urology 19(1): 48	- Systematic review used as source of primary studies
Jiang, Yu-Li, Yu, Dong-Dong, Xu, Yang et al. (2023) Comparison of perioperative outcomes of robotic vs. laparoscopic partial nephrectomy for renal tumors with a RENAL nephrometry score >=7: A meta-analysis. Frontiers in surgery 10: 1138974	- Exclude - For review C. Proportion of patients stage T3 < 90%
Jin, Seok-Joon, Park, Jun-Young, Kim, Doo-Hwan et al. (2017) Comparison of postoperative pain between laparoscopic and robot-assisted partial nephrectomies for renal tumors: A propensity score matching analysis. Medicine 96(29): e7581	- Exclude - For review C. Proportion of patients stage T3 < 90%
Jokimaki, A., Hietala, H., Lemma, J. et al. (2023) Previous radiotherapy improves treatment responses and causes a trend toward longer time to progression among patients with immune checkpoint inhibitor-related adverse events.	- Review H, SABR exclude *Protocol relevant outcomes are not reported for RCC subgroup*

Study	Reason
Cancer Immunology, Immunotherapy 72(10): 3337-3347	
Jones, J.O., Ince, W.H.J., Welsh, S.J. et al. (2022) Activity of Immunotherapy Regimens on Primary Renal Tumours: A Systematic Review. Kidney Cancer 6(4): 221-236	- Systematic review used as source of primary studies
Joslyn, Sue A; Sirintrapun, S Joseph; Konety, Badrinath R (2005) Impact of lymphadenectomy and nodal burden in renal cell carcinoma: retrospective analysis of the National Surveillance, Epidemiology, and End Results database. Urology 65(4): 675-80	- There is no information on cT or pT stage
Junker, Theresa, Duus, Louise, Rasmussen, Benjamin S B et al. (2022) Quality of life and complications after nephron-sparing treatment of renal cell carcinoma stage T1-a systematic review. Systematic reviews 11(1): 4	- Systematic review used as source of primary studies
Kalogirou, Charis, Fender, Hendrik, Muck, Patricia et al. (2017) Long-Term Outcome of Nephron-Sparing Surgery Compared to Radical Nephrectomy for Renal Cell Carcinoma >=4 cm - A Matched-Pair Single Institution Analysis. Urologia internationalis 98(2): 138-147	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*
Kandi, Maryam, Richard, Patrick O, Violette, Philippe D et al. (2024) Complications and blood loss after invasive treatments for small renal masses: A systematic review. Canadian Urological Association journal = Journal de l'Association des urologues du Canada	- Comparator in study does not match that specified in protocol
Kaneko, Gou, Miyajima, Akira, Kikuchi, Eiji et al. (2012) The benefit of laparoscopic partial nephrectomy in high body mass index patients. Japanese journal of clinical oncology 42(7): 619-24	- Exclude, review C. Study included only patients T1-T2
Kapoor, A., Wong, E.C.L., Fang, W. et al. (2019) Upfront cytoreductive nephrectomy vs. Upfront systemic therapy in metastatic kidney cancer. Canadian Urological Association Journal 13(11): e377-e381	- Data not reported in an extractable format *Protocol relevant outcomes reported as median, no time to event data*
Kato, Daiki, Nakane, Keita, Enomoto, Torai et al. (2021) The utility of laparoscopic partial nephrectomy with renal function preservation,	- Data not reported in an extractable format

Study	Reason
regardless of warm ischemia time, compared with laparoscopic radical nephrectomy. Asian journal of endoscopic surgery 14(3): 386-393	
Kato, Renpei, Naito, Sei, Numakura, Kazuyuki et al. (2022) Significance of upfront cytoreductive nephrectomy stratified by IMDC risk for metastatic renal cell carcinoma in targeted therapy era - a multi-institutional retrospective study. International journal of clinical oncology 27(3): 563-573	- Mixed population of SACT pre/post non-pharmacological regimens
Katsanos, K, Mailli, L, Krokidis, M et al. (2014) Systematic review and meta-analysis of thermal ablation versus surgical nephrectomy for small renal tumours. Cardiovascular and interventional radiology 37(2): 427-37	- More recent systematic review included that covers the same topic
Katsimperis, Stamatios, Tzelves, Lazaros, Bellos, Themistoklis et al. (2022) Cytoreductive nephrectomy for synchronous metastatic renal cell carcinoma. Is there enough evidence?. Archivio italiano di urologia, andrologia : organo ufficiale [di] Societa italiana di ecografia urologica e nefrologica 94(4): 476-485	- Systematic review used as source of primary studies
Kawase, Kota, Enomoto, Torai, Kawase, Makoto et al. (2022) The Impact of Postoperative Renal Function Recovery after Laparoscopic and Robot-Assisted Partial Nephrectomy in Patients with Renal Cell Carcinoma. Medicina (Kaunas, Lithuania) 58(4)	- Exclude - For review C. Proportion of patients stage T3 < 90%
Khalifeh, Ali, Autorino, Riccardo, Hillyer, Shahab P et al. (2013) Comparative outcomes and assessment of trifecta in 500 robotic and laparoscopic partial nephrectomy cases: a single surgeon experience. The Journal of urology 189(4): 1236-42	- Exclude - For review C. Proportion of patients stage T3 < 90%
Khalil, M.I., Ubeda, J., Soehner, T. et al. (2019) Contemporary Perioperative Morbidity and Mortality Rates of Minimally Invasive vs Open Partial Nephrectomy in Obese Patients with Kidney Cancer. Journal of Endourology 33(11): 920-927	- There is no information on cT or pT stage
Khan, M.M.A., Patel, R.A., Jain, N. et al. (2019) Prospective analysis of laparoscopic versus open radical nephrectomy for renal tumours more than	- Non-OECD country - There is no information on cT or pT stage

Study	Reason
7 cm. Journal of Minimal Access Surgery 15(1): 14-18	
Kim, Jeong Ho, Park, Yong Hyun, Kim, Yong June et al. (2015) Perioperative and long-term renal functional outcomes of robotic versus laparoscopic partial nephrectomy: a multicenter matched-pair comparison. World journal of urology 33(10): 1579-84	- There is no information on cT or pT stage
Kim, Jung Kwon, Lee, Hakmin, Oh, Jong Jin et al. (2019) Comparison of robotic and open partial nephrectomy for highly complex renal tumors (RENAL nephrometry score >=10). PloS one 14(1): e0210413	- Exclude - For review C. Proportion of patients stage T3 < 90%
Kim, Na Young, Lee, Hye Sun, Park, Jin Ha et al. (2022) Influence of age on gender-related differences in acute kidney injury after minimally invasive radical or partial nephrectomy. Surgical endoscopy 36(5): 2962-2972	- Study does not contain a relevant outcome
Kim, Simon P, Thompson, R Houston, Boorjian, Stephen A et al. (2012) Comparative effectiveness for survival and renal function of partial and radical nephrectomy for localized renal tumors: a systematic review and meta-analysis. The Journal of urology 188(1): 51-7	- Systematic review used as source of primary studies
Kim, Sung Han, Jeong, Kyung-Chae, Joung, Jae Young et al. (2018) Prognostic significance of nephrectomy in metastatic renal cell carcinoma treated with systemic cytokine or targeted therapy: A 16-year retrospective analysis. Scientific reports 8(1): 2974	- Study does not contain a relevant intervention *Mixed population, receiving radical nephrectomy and CN*
Kim, Sung Han, Lee, Eun-Sik, Kim, Hyeon Hoe et al. (2015) A propensity-matched comparison of perioperative complications and of chronic kidney disease between robot-assisted laparoscopic partial nephrectomy and radiofrequency ablative therapy. Asian journal of surgery 38(3): 126-33	- Primary study covered fully by an included systematic review
Kim, Sung Han, Park, Boram, Hwang, Eu Chang et al. (2021) A Retrospective, Multicenter, Long-Term Follow-Up Analysis of the Prognostic Characteristics of Recurring Non-Metastatic Renal Cell Carcinoma After Partial or Radical Nephrectomy. Frontiers in oncology 11: 653002	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*

Study	Reason
Kizilay, Fuat, Turna, Burak, Apaydin, Erdal et al. (2019) Comparison of long-term outcomes of laparoscopic and robot-assisted laparoscopic partial nephrectomy. The Kaohsiung journal of medical sciences 35(4): 238-243	- Comparator in study does not match that specified in protocol
Klatte, Tobias, Berni, Alessandro, Serni, Sergio et al. (2021) Intermediate- and long-term oncological outcomes of active surveillance for localized renal masses: a systematic review and quantitative analysis. BJU international 128(2): 131-143	- More recent systematic review included that covers the same topic *Single arm studies*
Klatte, Tobias, Fife, Kate, Welsh, Sarah J et al. (2018) Prognostic effect of cytoreductive nephrectomy in synchronous metastatic renal cell carcinoma: a comparative study using inverse probability of treatment weighting. World journal of urology 36(3): 417-425	- Mixed population of SACT pre/post non-pharmacological regimens
Klatte, Tobias, Grubmuller, Bernhard, Waldert, Matthias et al. (2011) Laparoscopic cryoablation versus partial nephrectomy for the treatment of small renal masses: systematic review and cumulative analysis of observational studies. European urology 60(3): 435-43	- Review article but not a systematic review
Klatte, Tobias; Shariat, Shahrokh F; Remzi, Mesut (2014) Systematic review and meta-analysis of perioperative and oncologic outcomes of laparoscopic cryoablation versus laparoscopic partial nephrectomy for the treatment of small renal tumors. The Journal of urology 191(5): 1209-17	- More recent systematic review included that covers the same topic
Kobayashi, Satoshi, Mutaguchi, Jun, Kashiwagi, Eiji et al. (2021) Clinical advantages of robot-assisted partial nephrectomy versus laparoscopic partial nephrectomy in terms of global and split renal functions: A propensity score-matched comparative analysis. International journal of urology : official journal of the Japanese Urological Association 28(6): 630-636	- Exclude - For review C. Proportion of patients stage T3 < 90%
Kokorovic, Andrea and Rendon, Ricardo A (2019) Cytoreductive nephrectomy in metastatic kidney cancer: what do we do now?. Current opinion in supportive and palliative care 13(3): 255-261	- Review article but not a systematic review

Study	Reason
Komninos, Christos, Shin, Tae Young, Tuliao, Patrick et al. (2014) R-LESS partial nephrectomy trifecta outcome is inferior to multiport robotic partial nephrectomy: comparative analysis. European urology 66(3): 512-7	- There is no information on cT or pT stage
Koo, Kyo Chul, Kim, Jong Chan, Cho, Kang Su et al. (2016) Oncological outcomes after partial vs radical nephrectomy in renal cell carcinomas of <=7 cm with presumed renal sinus fat invasion on preoperative imaging. BJU international 117(1): 87-93	- Not a relevant study design *Consecutive case series*
Kopp, Ryan P, Mehrazin, Reza, Palazzi, Kerrin L et al. (2014) Survival outcomes after radical and partial nephrectomy for clinical T2 renal tumours categorised by R.E.N.A.L. nephrometry score. BJU international 114(5): 708-18	- Secondary publication of an included study that does not provide any additional relevant information
Kowalewski, Karl-Friedrich, Muller, Dennis, Kirchner, Marietta et al. (2021) Robotic-Assisted Versus Conventional Open Partial Nephrectomy (Robocop): A Propensity Score-Matched Analysis of 249 Patients. Urologia internationalis 105(56): 490-498	- There is no information on cT or pT stage
Krabbe, Laura-Maria, Haddad, Ahmed Q, Westerman, Mary E et al. (2014) Surgical management of metastatic renal cell carcinoma in the era of targeted therapies. World journal of urology 32(3): 615-22	- Review article but not a systematic review
Kroeze, Stephanie G C, Fritz, Corinna, Schaule, Jana et al. (2021) Stereotactic radiotherapy combined with immunotherapy or targeted therapy for metastatic renal cell carcinoma. BJU international 127(6): 703-711	- Mixed population of SACT pre/post non-pharmacological regimens *76% of the participants received SACT before SRT, no subgroup results reported*
Kunath, Frank, Schmidt, Stefanie, Krabbe, Laura-Maria et al. (2017) Partial nephrectomy versus radical nephrectomy for clinical localised renal masses. The Cochrane database of systematic reviews 5: cd012045	- Systematic review used as source of primary studies
Kunkle, David A; Egleston, Brian L; Uzzo, Robert G (2008) Excise, ablate or observe: the small renal mass dilemma--a meta-analysis and review. The Journal of urology 179(4): 1227-4	- More recent systematic review included that covers the same topic

Study	Reason
Kwak, Cheol, Park, Yong Hyun, Jeong, Chang Wook et al. (2007) No role of adjuvant systemic therapy after complete metastasectomy in metastatic renal cell carcinoma?. Urologic oncology 25(4): 310-6	- Comparator in study does not match that specified in protocol *All included participants had undergone complete metastasectomy. Compares SACT vs. No SACT population.*
Kwak, Cheol, Park, Yong Hyun, Jeong, Chang Wook et al. (2007) Metastasectomy without systemic therapy in metastatic renal cell carcinoma: comparison with conservative treatment. Urologia internationalis 79(2): 145-51	- Study does not contain a relevant intervention *None of the participants received SACT at anytime point. Study compares metastasectomy vs. no metastasectomy after nephrectomy*
La Vecchia, Maria, Federico, Manuela, Aiello, Dario et al. (2024) The Role of Stereotactic Body Radiotherapy (SBRT) in Oligoprogressive Renal Cell Carcinoma (RCC) Treated with ICIs-TKIs: A Retrospective Multicentric Study. Journal of personalized medicine 14(10)	- Comparator in study does not match that specified in protocol *There isn't a defined comparator group. Outcomes were reported for some patients before SBRT but these outcomes did not meet the protocol criteria and these patients did go on to have SBRT also.*
Laganosky, D., Filson, C.P., Patil, D. et al. (2020) Survival benefit with extended lymphadenectomy for advanced renal malignancy: A population-based analysis. Asian Journal of Urology 7(1): 29-36	- Comparator in study does not match that specified in protocol
Lai, G.-S., Li, J.-R., Wang, S.-S. et al. (2020) Survival analysis of pathological T3a upstaging in clinical T1 renal cell carcinoma. In Vivo 34(2): 799-805	- Non-OECD country
Lai, Gu-Shun, Li, Jian-Ri, Wang, Shian-Shiang et al. (2024) Outcome benefits of upfront cytoreductive nephrectomy for patients with metastatic renal cell carcinoma: An analysis of the TriNetX database. PloS one 19(3): e0299102	- Non-OECD country
Lai, T.C.T.; Ma, W.K.; Yiu, M.K. (2016) Partial nephrectomy for t1 renal cancer can achieve an equivalent oncological outcome to radical nephrectomy with better renal preservation: The way to go. Hong Kong Medical Journal 22(1): 39-45	- Primary study covered fully by an included systematic review
Lam, Jing Kai Jackie; Tan, Sher Yin; Chong, Kian Tai (2020) Is partial nephrectomy worth performing compared to radical nephrectomy for small, localised renal cortical tumours in geriatric patients?. Singapore medical journal 61(4): 190-193	- Data not reported in an extractable format *reports CKD at 5 years but it was published within the search dates of Ochoa-Arvizo - do we include Lam?To exclude - Looking at this paper they have not reported the N at 5yrs which is likely why it wasn't included in Ochoa*

Study	Reason
Larcher, A, Sun, M, Dell'Oglio, P et al. (2017) Mortality, morbidity and healthcare expenditures after local tumour ablation or partial nephrectomy for T1A kidney cancer. European journal of surgical oncology : the journal of the European Society of Surgical Oncology and the British Association of Surgical Oncology 43(4): 815-822	- Data not reported in an extractable format *Insufficient data reported to assess study methodology*
Larcher, Alessandro, Meskawi, Malek, Valdivieso, Roger et al. (2016) Comparison of renal function detriments after local tumor ablation or partial nephrectomy for renal cell carcinoma. World journal of urology 34(3): 383-9	- Data not reported in an extractable format *Insufficient information reported to assess study*
Laru, Lauri, Ronkainen, Hanna, Ohtonen, Pasi et al. (2021) Nephrectomy improves the survival of metastatic renal cell cancer patients with moderate to good performance status-results from a Finnish nation-wide population-based study from 2005 to 2010. World journal of surgical oncology 19(1): 190	- Comparator in study does not match that specified in protocol *Study compares CN vs. metastasectomy. Does not report about the SACT status*
Lasorsa, Francesco, Bignante, Gabriele, Orsini, Angelo et al. (2024) Partial nephrectomy in elderly patients: a systematic review and analysis of comparative outcomes. European journal of surgical oncology : the journal of the European Society of Surgical Oncology and the British Association of Surgical Oncology 50(10): 108578	- Systematic review used as source of primary studies
Le Guevelou, Jennifer, Sargos, Paul, Siva, Shankar et al. (2023) The Emerging Role of Extracranial Stereotactic Ablative Radiotherapy for Metastatic Renal Cell Carcinoma: A Systematic Review. European urology focus 9(1): 114-124	- Systematic review used as source of primary studies
Lee, H., Lee, M., Lee, S.E. et al. (2018) Outcomes of pathologic stage T3a renal cell carcinoma up-staged from small renal tumor: Emphasis on partial nephrectomy. BMC Cancer 18(1): 427	- Study does not contain a relevant intervention
Lee, Nora G; Zampini, Anna; Tuerk, Ingolf (2012) Single surgeon's experience with laparoscopic versus robotic partial nephrectomy: perioperative outcomes/complications and influence of tumor characteristics on choice of therapy. The Canadian journal of urology 19(5): 6465-70	- Exclude review C. Study included only patients T1-T2

Study	Reason
Lee, Sangchul, Oh, Jongjin, Hong, Seong Kyu et al. (2011) Open versus robot-assisted partial nephrectomy: effect on clinical outcome. Journal of endourology 25(7): 1181-5	- There is no information on cT or pT stage
Lee, Sangchul; Ryu, Hoyoung; Lee, Jeong Woo (2021) Open Partial Nephrectomy vs. Robot-assisted Partial Nephrectomy for a Renal Tumor Larger than 4 cm: a Propensity Score Matching Analysis. Journal of Korean medical science 36(20): e135	- Exclude - For review C. Proportion of patients stage T3 < 90%
Lenis, A.T., Salmasi, A.H., Donin, N.M. et al. (2018) Trends in usage of cytoreductive partial nephrectomy and effect on overall survival in patients with metastatic renal cell carcinoma. Urologic Oncology: Seminars and Original Investigations 36(2): 78e21-78e28	- Comparator in study does not match that specified in protocol *Compares partial CN Vs. radical CN*
Lesnyak, O., Stroy, O., Banyra, O. et al. (2020) Assessment of the effectiveness of radiofrequency ablation as a technique for destroying small renal tumors in patients older than 70. Central European Journal of Urology 73(4): 1-7	- Non-OECD country
Li, G, Luo, Q, Lang, Z et al. (2018) Histopathologic analysis of stage pT1b kidney neoplasms for optimal surgical margins of nephron-sparing surgery. Clinical & translational oncology : official publication of the Federation of Spanish Oncology Societies and of the National Cancer Institute of Mexico 20(9): 1196-1201	- Study does not contain a relevant outcome
Li, Jingdong, Zhang, Yanping, Teng, Zhihai et al. (2019) Partial nephrectomy versus radical nephrectomy for cT2 or greater renal tumors: a systematic review and meta-analysis. Minerva urologica e nefrologica = The Italian journal of urology and nephrology 71(5): 435-444	- Systematic review used as source of primary studies
Li, Jinze, Peng, Lei, Cao, Dehong et al. (2020) Comparison of Perioperative Outcomes of Robot-Assisted vs. Laparoscopic Radical Nephrectomy: A Systematic Review and Meta-Analysis. Frontiers in oncology 10: 551052	- Exclude - For review C. Proportion of patients stage T3 < 90%
Li, Kun-Peng, Chen, Si-Yu, Wan, Shun et al. (2024) Percutaneous ablation versus robotic-	- Systematic review used as source of primary studies

Study	Reason
assisted partial nephrectomy for cT1 renal cell carcinoma: an evidence-based analysis of comparative outcomes. Journal of robotic surgery 18(1): 301	
Li, Kun-Peng, Chen, Si-Yu, Wang, Chen-Yang et al. (2023) The impact of cytoreductive nephrectomy on survival outcomes in patients with metastatic renal cell carcinoma receiving immunotherapy: An evidence-based analysis of comparative outcomes. Frontiers in immunology 14: 1132466	- Exclude - wrong population
Li, Kun-Peng, Chen, Si-Yu, Wang, Chen-Yang et al. (2023) Comparison between minimally invasive partial nephrectomy and open partial nephrectomy for complex renal tumors: a systematic review and meta-analysis. International journal of surgery (London, England) 109(6): 1769-1782	- Exclude - For review C. Proportion of patients stage T3 < 90%
Li, Kun-Peng, Wan, Shun, Chen, Si-Yu et al. (2024) Perioperative, functional and oncologic outcomes of percutaneous ablation versus minimally invasive partial nephrectomy for clinical T1 renal tumors: outcomes from a pooled analysis. Journal of robotic surgery 18(1): 306	- Systematic review used as source of primary studies
Li, Kun-Peng, Wan, Shun, Wang, Chen-Yang et al. (2023) Perioperative, functional, and oncologic outcomes of robot-assisted versus open partial nephrectomy for complex renal tumors (RENAL score >= 7): an evidence-based analysis. Journal of robotic surgery 17(4): 1247-1258	- Exclude - For review C. Proportion of patients stage T3 < 90%
Li, Pin, Peng, Cheng, Gu, Liangyou et al. (2019) Radical Nephrectomy with or without Lymph Node Dissection for pT3 Renal Cell Carcinoma: A Propensity Score-based Analysis. Journal of Cancer 10(10): 2369-2375	- Non-OECD country - Comparator in study does not match that specified in protocol
Li, Wentao, Cheng, Yanlei, Cheng, Yi et al. (2014) Clinical efficacy of radical nephrectomy versus nephron-sparing surgery on localized renal cell carcinoma. European journal of medical research 19: 58	- Systematic review used as source of primary studies
Liao, Xinyang, Qiu, Shi, Wang, Wanyu et al. (2019) Partial nephrectomy vs cryoablation for	- Non-OECD country

Study	Reason
T1a renal cell carcinoma: A comparison of survival benefit stratified by tumour size. Cancer epidemiology 59: 221-226	
Liek, Elisabeth, Elsebach, Klaus, Gobel, Hubert et al. (2018) The Overall Survival Benefit for Patients with T1 Renal Cell Carcinoma after Nephron-Sparing Surgery Depends on Gender and Age. Urologia internationalis 100(3): 309-316	- Data not reported in an extractable format *Overall survival reported as Kaplan-Meier and P values*
Lin, J., Song, A.J., Hoffman-Censits, J. et al. (2020) A Pilot Study of Radiation Therapy in Combination with Pembrolizumab in Patients with Metastatic Renal Cell Cancer. American Journal of Clinical Oncology: Cancer Clinical Trials 43(2): 82-86	- Not a relevant study design *Reports a part of RCT. Reported subgroup irrelevant to the protocol*
Lin, Pengxiu, Wu, Minhong, Gu, Hongyong et al. (2021) Comparison of outcomes between laparoscopic and robot-assisted partial nephrectomy for complex renal tumors: RENAL score >=7 or maximum tumor size >4 cm. Minerva urology and nephrology 73(2): 154-164	- Exclude, review C. - Study included only patients T1-T2
Lin, Wenhao, Yang, Zhenggang, Yan, Ling et al. (2023) Comparison of partial nephrectomy and radical nephrectomy for cystic renal cell carcinoma: a SEER-based and retrospective study. Scientific reports 13(1): 8052	- SEER database overlap
Liu, Changfu, Cao, Fei, Xing, Wenge et al. (2019) Efficacy of cryoablation combined with sorafenib for the treatment of advanced renal cell carcinoma. International journal of hyperthermia : the official journal of European Society for Hyperthermic Oncology, North American Hyperthermia Group 36(1): 220-228	- Study does not contain a relevant intervention *SACT given along with cryotherapy*
Liu, Gang, Ma, Yulei, Wang, Shouhua et al. (2017) Laparoscopic Versus Open Radical Nephrectomy for Renal Cell Carcinoma: a Systematic Review and Meta-Analysis. Translational oncology 10(4): 501-510	- Exclude - For review C. Proportion of patients stage T3 < 90%
Liu, H.; Gao, C.; Yu, H. (2016) Safety and effectiveness of percutaneous radiofrequency ablation in early stage renal cell carcinoma. Oncology Letters 12(6): 4618-4622	- Non-OECD country

Study	Reason
Liu, Hui, Kong, Qing-Fang, Li, Jian et al. (2021) A meta-analysis for comparison of partial nephrectomy vs. radical nephrectomy in patients with pT3a renal cell carcinoma. Translational andrology and urology 10(3): 1170-1178	- Comparator in study does not match that specified in protocol *PN vs RN for T3 tumour*
Liu, Ning, Huang, Daoguang, Cheng, Xiangming et al. (2017) Percutaneous radiofrequency ablation for renal cell carcinoma vs. partial nephrectomy: Comparison of long-term oncologic outcomes in both clear cell and non-clear cell of the most common subtype. Urologic oncology 35(8): 530e1-530e6	- Non-OECD country
Liu, Wing K, Lam, J M, Butters, T et al. (2020) Cytoreductive nephrectomy in metastatic renal cell carcinoma: outcome of patients treated with a multidisciplinary, algorithm-driven approach. World journal of urology 38(12): 3199-3205	- Mixed population of SACT pre/post non-pharmacological regimens
Liu, X-H, Song, J, Ma, W-M et al. (2024) Comparison of perioperative outcomes between robot-assisted partial nephrectomy and laparoscopic partial nephrectomy in obese patients. European review for medical and pharmacological sciences 28(10): 3583-3589	- Exclude - review C. Patients with localised tumour
Liu, Y., Zhang, Z., Han, H. et al. (2021) Survival After Combining Stereotactic Body Radiation Therapy and Tyrosine Kinase Inhibitors in Patients With Metastatic Renal Cell Carcinoma. Frontiers in Oncology 11: 607595	- Study does not contain a relevant outcome
Liu, Yang, Long, Wen, Zhang, Zhiling et al. (2021) Metastasis-directed stereotactic body radiotherapy for oligometastatic renal cell carcinoma: extent of tumor burden eradicated by radiotherapy. World journal of urology 39(11): 4183-4190	- Mixed population of SACT pre/post non-pharmacological regimens - Review H, SABR exclude
Liu, Yang, Zhang, Zhiling, Liu, Ruiqi et al. (2021) Stereotactic body radiotherapy in combination with non-frontline PD-1 inhibitors and targeted agents in metastatic renal cell carcinoma. Radiation oncology (London, England) 16(1): 211	- Review H, SABR exclude *doesn't separate out SABR given before vs after SACT*
Liu, Ying, Wang, Li, Bao, Er-Hao et al. (2024) Perioperative, functional, and oncological outcomes after cryoablation or partial	- Systematic review used as source of primary studies

Study	Reason
nephrectomy for small renal masses in solitary kidneys: a systematic review and meta-analysis. BMC urology 24(1): 19	
Liu, Z., Wang, P., Xia, D. et al. (2013) Comparison between laparoscopic and open partial nephrectomy: Surgical, oncologic, and functional outcomes. Kaohsiung Journal of Medical Sciences 29(11): 624-628	- Non-OECD country - Exclude review C. Study included only patients T1-T2
Liu, Zhenhua, Yang, Zhenyu, Li, Jibin et al. (2023) Partial versus radical nephrectomy for the treatment of pT3aN0M0 renal cell carcinoma: A propensity score analysis. Asian journal of surgery 46(9): 3607-3613	- Comparator in study does not match that specified in protocol *For review C - comparison RN vs PN in T3 tumours which is not applicable for this question*
Ljungberg, Borje, Sundqvist, Pernilla, Lindblad, Per et al. (2020) Survival advantage of upfront cytoreductive nephrectomy in patients with primary metastatic renal cell carcinoma compared with systemic and palliative treatments in a real-world setting. Scandinavian journal of urology 54(6): 487-492	- Comparator in study does not match that specified in protocol *Compares SACT alone with upfront CN.*
Long, Jean-Alexandre, Yakoubi, Rachid, Lee, Byron et al. (2012) Robotic versus laparoscopic partial nephrectomy for complex tumors: comparison of perioperative outcomes. European urology 61(6): 1257-62	- Exclude - review C. Patients with localised tumour
Loo Gan, Chun, Huang, Jiaming, Pan, Elizabeth et al. (2023) Real-world Practice Patterns and Safety of Concurrent Radiotherapy and Cabozantinib in Metastatic Renal Cell Carcinoma: Results from the International Metastatic Renal Cell Carcinoma Database Consortium. European urology oncology 6(2): 204-211	- Review H SABR exclude - Mixed population of SACT pre/post non-pharmacological regimens
Lounova, Veronika, Student, Vladimir Jr, Purova, Dana et al. (2024) Frequency of benign tumors after partial nephrectomy and the association between malignant tumor findings and preoperative clinical parameters. BMC urology 24(1): 175	- Study did not compare the interventions of interest *Reporting results for benign and malignant tumours and not for the two different surgical techniques for nephrectomy*
Love, Harrison, Yong, Courtney, Slaven, James E et al. (2024) Outcomes of open versus robotic partial nephrectomy: a 20-year single institution experience. Journal of robotic surgery 18(1): 315	- Exclude - For review C. Proportion of patients stage T3 < 90%

Study	Reason
Lucas, Steven M, Mellon, Matthew J, Erntsberger, Luke et al. (2012) A comparison of robotic, laparoscopic and open partial nephrectomy. JSLS : Journal of the Society of Laparoendoscopic Surgeons 16(4): 581-7	- Comparator in study does not match that specified in protocol
Luciani, Lorenzo G, Chiodini, Stefano, Mattevi, Daniele et al. (2017) Robotic-assisted partial nephrectomy provides better operative outcomes as compared to the laparoscopic and open approaches: results from a prospective cohort study. Journal of robotic surgery 11(3): 333-339	- Exclude - For review C. Proportion of patients stage T3 < 90%
Luo, X., Yi, M., Hu, Q. et al. (2019) Is cytoreductive nephrectomy necessary for metastatic renal cell carcinoma: A systematic review and meta-analysis. International Journal of Clinical and Experimental Medicine 12(6): 7029-7037	- Exclude - Result reported in the most updated MA
Luo, X, Li, J-X, Liu, Y-T et al. (2019) Influence of lymph node dissection in patients undergoing radical nephrectomy for non-metastatic renal cell carcinoma: a systematic review and meta-analysis. European review for medical and pharmacological sciences 23(14): 6079-6090	- Exclude - For review C. Proportion of patients stage T3 < 90%
Luo, You, Chen, San-San, Bai, Liang et al. (2017) Nephron Sparing Surgery Has Better Oncologic Outcomes Than Extirpative Nephrectomy in T1a but Not in T1b or T2 Stage Renal Cell Carcinoma. Medical science monitor : international medical journal of experimental and clinical research 23: 3480-3488	- SEER database overlap
Lv, ZongYing, Chen, GuiYuan, Chen, XiaoBin et al. (2023) Open versus robot-assisted partial nephrectomy for highly complex renal masses: a meta-analysis of perioperitive and functional outcomes. Journal of robotic surgery 17(5): 1955-1965	- Exclude - For review C. Proportion of patients stage T3 < 90%
Ma, Ming-Wei, Li, Hong-Zhen, Gao, Xian-Shu et al. (2022) Outcomes of High-Dose Stereotactic Ablative Radiotherapy to All/Multiple Sites for Oligometastatic Renal Cell Cancer Patients. Current oncology (Toronto, Ont.) 29(10): 7832-7841	- Mixed population of SACT pre/post non-pharmacological regimens - Review H, SABR exclude

Study	Reason
MacLennan, Steven, Imamura, Mari, Lapitan, Marie C et al. (2012) Systematic review of oncological outcomes following surgical management of localised renal cancer. European urology 61(5): 972-93	- Systematic review used as source of primary studies
MacLennan, Steven, Imamura, Mari, Lapitan, Marie C et al. (2012) Systematic review of perioperative and quality-of-life outcomes following surgical management of localised renal cancer. European urology 62(6): 1097-117	- Systematic review used as source of primary studies
Maisel, Franziska, Smolle, Maria A, Mollnar, Stefanie et al. (2022) Benefit of Metastasectomy in Renal Cell Carcinoma: A Propensity Score Analysis. Clinical genitourinary cancer 20(4): 344-353	- Comparator in study does not match that specified in protocol - Study does not contain a relevant intervention
Malaeb, B.S., Sherwood, J.B., Taylor, G.D. et al. (2005) Hand-assisted laparoscopic nephrectomy for renal masses >9.5 cm: Series comparison with open radical nephrectomy. Urologic Oncology: Seminars and Original Investigations 23(5): 323-327	- Exclude - For review C. Proportion of patients stage T3 < 90%
Manikandan, R; Srinivasan, V; Rane, A (2004) Which is the real gold standard for small-volume renal tumors? Radical nephrectomy versus nephron-sparing surgery. Journal of endourology 18(1): 39-44	- More recent systematic review included that covers the same topic
Marchioni, M., Bandini, M., Pompe, R.S. et al. (2018) The impact of lymph node dissection and positive lymph nodes on cancer-specific mortality in contemporary pT2-3 non-metastatic renal cell carcinoma treated with radical nephrectomy. BJU International 121(3): 383-392	- Comparator in study does not match that specified in protocol *LND vs no LND*
Marchioni, Michele, Cheaib, Joseph G, Takagi, Toshio et al. (2021) Active surveillance for small renal masses in elderly patients does not increase overall mortality rates compared to primary intervention: a propensity score weighted analysis. Minerva urology and nephrology 73(6): 781-788	- Comparator in study does not match that specified in protocol *Ablation and partial nephrectomy groups combined in results vs active surveillance*
Marchioni, Michele, Preisser, Felix, Bandini, Marco et al. (2019) Comparison of Partial Versus Radical Nephrectomy Effect on Other-cause	- Study does not contain a relevant outcome

Study	Reason
Mortality, Cancer-specific Mortality, and 30-day Mortality in Patients Older Than 75 Years. European urology focus 5(3): 467-473	
Margulis, Vitaly, Tamboli, Pheroze, Jacobsohn, Kenneth M et al. (2007) Oncological efficacy and safety of nephron-sparing surgery for selected patients with locally advanced renal cell carcinoma. BJU international 100(6): 1235-9	- Comparator in study does not match that specified in protocol *Compares Rn vs PN in locally advanced RCC - not applicable for review C.*
Maric, P., Jovanovic, M., Milovic, N. et al. (2017) Complications of radical and partial nephrectomy for renal cell carcinoma up to 7 cm. Vojnosanitetski Pregled 74(7): 639-643	- Data not reported in an extractable format *Severe complications (Clavien-Dindo ≥III) were only reported in a graph. Duration of hospital stay was reported as median and range*
Mason, Ross J, Atwell, Thomas D, Lohse, Christine et al. (2017) Renal functional outcomes in patients undergoing percutaneous cryoablation or partial nephrectomy for a solitary renal mass. BJU international 120(4): 544-549	- Study does not contain a relevant outcome
Massari, Francesco, Di Nunno, Vincenzo, Gatto, Lidia et al. (2018) Should CARMENA Really Change our Attitude Towards Cytoreductive Nephrectomy in Metastatic Renal Cell Carcinoma? A Systematic Review and Meta-Analysis Evaluating Cytoreductive Nephrectomy in the Era of Targeted Therapy. Targeted oncology 13(6): 705-714	- Mixed population of SACT pre/post non-pharmacological regimens
Masson-Lecomte, Alexandra, Bensalah, Karim, Seringe, Elise et al. (2013) A prospective comparison of surgical and pathological outcomes obtained after robot-assisted or pure laparoscopic partial nephrectomy in moderate to complex renal tumours: results from a French multicentre collaborative study. BJU international 111(2): 256-63	- Exclude - For Review C Proportion of patients stage T3 < 90%
Masson-Lecomte, Alexandra, Yates, David R, Hupertan, Vincent et al. (2013) A prospective comparison of the pathologic and surgical outcomes obtained after elective treatment of renal cell carcinoma by open or robot-assisted partial nephrectomy. Urologic oncology 31(6): 924-9	- There is no information on cT or pT stage
Mastroianni, R., Chiacchio, G., Perpepaj, L. et al. (2024) Comparison of Perioperative, Functional,	- Exclude, review C- Study included only patients T1-T2

Study	Reason
and Oncologic Outcomes of Open vs. Robot-Assisted Off-Clamp Partial Nephrectomy: A Propensity Scored Match Analysis. Sensors (Basel, Switzerland) 24(9)	
Mathieu, Romain, Pignot, Geraldine, Ingles, Alexandre et al. (2015) Nephrectomy improves overall survival in patients with metastatic renal cell carcinoma in cases of favorable MSKCC or ECOG prognostic features. Urologic oncology 33(8): 339e9-15	- Mixed population of SACT pre/post non-pharmacological regimens
May, D.N., Hill, H., Matrana, M.R. et al. (2021) A Contemporary Analysis of the 30-day Morbidity and Mortality Associated With Cytoreductive Nephrectomy. Urology 147: 186-191	- Comparator in study does not match that specified in protocol
Mearini, Luigi, Nunzi, Elisabetta, Vianello, Alberto et al. (2016) Margin and complication rates in clampless partial nephrectomy: a comparison of open, laparoscopic and robotic surgeries. Journal of robotic surgery 10(2): 135-44	- There is no information on cT or pT stage
Mehra, Ketan, Manikandan, Ramanitharan, Dorairajan, Lalgudi Narayanan et al. (2019) Trifecta Outcomes in Open, Laparoscopy or Robotic Partial Nephrectomy: Does the Surgical Approach Matter?. Journal of kidney cancer and VHL 6(1): 8-12	- Non-OECD country - There is no information on cT or pT stage
Mennitto, A, Verzoni, E, Cognetti, F et al. (2021) Radical metastasectomy followed by sorafenib versus observation in patients withclear cell renal cell carcinoma: extended follow -up of efficacy results from the randomized phase II RESORT trial. Expert review of clinical pharmacology 14(2): 261-268	- Comparator in study does not match that specified in protocol *Compares patients with metastatic rcc treated with sorafenib vs. observation-alone after the radical surgery of metastases*
Mershon, J Patrick; Tuong, Mei N; Schenkman, Noah S (2020) Thermal ablation of the small renal mass: a critical analysis of current literature. Minerva urologica e nefrologica = The Italian journal of urology and nephrology 72(2): 123-134	- More recent systematic review included that covers the same topic
Metcalf, Meredith R, Cheaib, Joseph G, Biles, Michael J et al. (2021) Outcomes of Active Surveillance for Young Patients with Small Renal Masses: Prospective Data from the DISSRM	- Comparator in study does not match that specified in protocol *Surgery and cryoablation combined*

Study	Reason
Registry. The Journal of urology 205(5): 1286-1293	
Metcalf, Meredith R, Pena, Vanessa N, Cheaib, Joseph G et al. (2022) Disparities in the Treatment and Survival of Metastatic Renal Cell Carcinoma. Urology 165: 89-97	- Mixed population of SACT pre/post non-pharmacological regimens
Michalak, M., Kopczynska, A., Antczak, A. et al. (2024) Outcomes of treatment, laboratory results, adverse effects, and tolerability of cancer treatment in patients with metastatic renal cell carcinoma treated with ipilimumab and nivolumab after cytoreductive nephrectomy. Nowotwory 74(6): 344	- Data not reported in an extractable format *Data for PFS was reported as mean and range only*
Michalak, M., Tomczak, P., Milecki, T. et al. (2024) Outcomes of treatment, laboratory results, adverse effects, and tolerability of cancer treatment in patients with metastatic renal-cell carcinoma treated with sunitinib after cytoreductive nephrectomy. Nowotwory 74(2): 105	- Exclude - assessed outcome is out of scope
Miller, Brady L, Mankowski Gettle, Lori, Van Roo, Jason R et al. (2018) Comparative Analysis of Surgery, Thermal Ablation, and Active Surveillance for Renal Oncocytic Neoplasms. Urology 112: 92-97	- Does not contain a population of people with kidney cancer
Miller, Jacob A, Balagamwala, Ehsan H, Angelov, Lilyana et al. (2016) Spine stereotactic radiosurgery with concurrent tyrosine kinase inhibitors for metastatic renal cell carcinoma. Journal of neurosurgery. Spine 25(6): 766-774	- Conference abstract
Minervini, Andrea, Vittori, Gianni, Antonelli, Alessandro et al. (2014) Open versus robotic-assisted partial nephrectomy: a multicenter comparison study of perioperative results and complications. World journal of urology 32(1): 287-93	- Exclude - For review C. Proportion of patients stage T3 < 90%
Mir, Maria Carmen, Derweesh, Ithaar, Porpiglia, Francesco et al. (2017) Partial Nephrectomy Versus Radical Nephrectomy for Clinical T1b and T2 Renal Tumors: A Systematic Review and Meta-analysis of Comparative Studies. European urology 71(4): 606-617	- Systematic review used as source of primary studies

Study	Reason
Mitchell, Christopher R, Atwell, Thomas D, Weisbrod, Adam J et al. (2011) Renal function outcomes in patients treated with partial nephrectomy versus percutaneous ablation for renal tumors in a solitary kidney. The Journal of urology 186(5): 1786-90	- Study does not contain a relevant outcome *eGFR during postop period only*
Mittal, Abhenil, Al-Ezzi, Esmail, Li, Xuan et al. (2023) The role of cytoreductive nephrectomy and systemic therapy in the management of tumour thrombus in patients with metastatic renal cell carcinoma. British journal of cancer 128(10): 1888-1896	- Mixed population of SACT pre/post non-pharmacological regimens
Miyake, Hideaki, Hinata, Nobuyuki, Imai, Satoshi et al. (2015) Partial nephrectomy for hilar tumors: comparison of conventional open and robot-assisted approaches. International journal of clinical oncology 20(4): 808-13	- There is no information on cT or pT stage
Mo, Cheng-Qiang, Yu, Zhou, Tan, Wu-Lin et al. (2014) Comparison between laparoscopic partial nephrectomy and laparoscopic ablation therapy: a meta-analysis. Minimally invasive therapy & allied technologies : MITAT : official journal of the Society for Minimally Invasive Therapy 23(6): 317-25	- More recent systematic review included that covers the same topic
Monda, S.; Lara, P.N.; Gulati, S. (2024) Post-Metastasectomy Adjuvant Therapy in Patients with Renal Cell Carcinoma: A Systematic Review. Kidney Cancer 8(1): 115	- Comparator in study does not match that specified in protocol
Mori, Keiichiro, Quhal, Fahad, Yanagisawa, Takafumi et al. (2022) The effect of immune checkpoint inhibitor combination therapies in metastatic renal cell carcinoma patients with and without previous cytoreductive nephrectomy: A systematic review and meta-analysis. International immunopharmacology 108: 108720	- Mixed population of SACT pre/post non-pharmacological regimens
Morkos, John, Porosnicu Rodriguez, Kori A, Zhou, Alice et al. (2020) Percutaneous Cryoablation for Stage 1 Renal Cell Carcinoma: Outcomes from a 10-year Prospective Study and Comparison with Matched Cohorts from the National Cancer Database. Radiology 296(2): 452-459	- Secondary publication of an included study that does not provide any additional relevant information

Study	Reason
Muhlbauer, Julia, de Gilde, Johannes, Mueller-Steinhardt, Michael et al. (2020) Perioperative Blood Transfusion Is a Predictor of Acute and Chronic Renal Function Deterioration after Partial and Radical Nephrectomy for Renal Cell Carcinoma. Urologia internationalis 104(910): 775-780	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*
Muhlbauer, Julia, Kowalewski, Karl-Friedrich, Walach, Margarete T et al. (2020) Partial nephrectomy preserves renal function without increasing the risk of complications compared with radical nephrectomy for renal cell carcinomas of stages pT2-3a. International journal of urology : official journal of the Japanese Urological Association 27(10): 906-913	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*
Nakada, S Y, Fadden, P, Jarrard, D F et al. (2001) Hand-assisted laparoscopic radical nephrectomy: comparison to open radical nephrectomy. Urology 58(4): 517-20	- Exclude - Review C. Patients with localised tumour
Nandanan, N., Veccia, A., Antonelli, A. et al. (2020) Outcomes and predictors of benign histology in patients undergoing robotic partial or radical nephrectomy for renal masses: A multicenter study. Central European Journal of Urology 73(1): 33-38	- Study does not contain a relevant outcome
Nason, Gregory J, Walsh, Leon G, Redmond, Ciaran E et al. (2015) Comparative effectiveness of adrenal sparing radical nephrectomy and non-adrenal sparing radical nephrectomy in clear cell renal cell carcinoma: Observational study of survival outcomes. Canadian Urological Association journal = Journal de l'Association des urologues du Canada 9(910): e583-8	- Comparator in study does not match that specified in protocol
Nayak, J.G., Patel, P., Saarela, O. et al. (2016) Pathological Upstaging of Clinical T1 to Pathological T3a Renal Cell Carcinoma: A Multi-institutional Analysis of Short-term Outcomes. Urology 94: 154-160	- Primary study covered fully by an included systematic review
Nguyen, D.P., Vertosick, E.A., Corradi, R.B. et al. (2016) Histological subtype of renal cell carcinoma significantly affects survival in the era of partial nephrectomy. Urologic Oncology:	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*

Study	Reason
Seminars and Original Investigations 34(6): e1-259	
Nian, Xinwen, Ye, Huamao, Zhang, Wei et al. (2022) Propensity-matched pair analysis of safety and efficacy between laparoscopic and open radical nephrectomy for the treatment of large renal masses (>10 cm): a retrospective cohort study. Translational andrology and urology 11(8): 1148-1156	- Exclude - review C. Study included only patients T1-T2
Nicaise, Edouard, Feldman, Adam S, Gusev, Andrew et al. (2024) A contemporary comparison of laparoscopic versus open partial nephrectomy for renal cell carcinoma. BMC urology 24(1): 58	- Exclude - review C. Study included only patients T1-T2
Nowak, Lukasz, Janczak, Dawid, Laszkiewicz, Jan et al. (2024) Clinical and Oncological Outcomes Following Percutaneous Cryoablation vs. Partial Nephrectomy for Clinical T1 Renal Tumours: Systematic Review and Meta-Analysis. Cancers 16(6)	- Systematic review used as source of primary studies
Nunez Bragayrac, Luciano, Hoffmeyer, Jan, Abbotoy, Daniel et al. (2016) Minimally invasive cytoreductive nephrectomy: a multi-institutional experience. World journal of urology 34(12): 1651-1656	- Comparator in study does not match that specified in protocol *No information about SACT*
O'Malley, Rebecca L, Berger, Aaron D, Kanofsky, Jamie A et al. (2007) A matched-cohort comparison of laparoscopic cryoablation and laparoscopic partial nephrectomy for treating renal masses. BJU international 99(2): 395-8	- Study published before included SR/s for the outcome/s reported
Ocak, Birol, Sahin, Ahmet Bilgehan, Erturk, Ismail et al. (2024) Can Cytoreductive Nephrectomy Improve Outcomes of Nivolumab Treatment in Patients with Metastatic Clear-Cell Renal Carcinoma?. Current oncology (Toronto, Ont.) 31(9): 5195-5205	- Data not reported in an extractable format *Only median (95% CI) OS has been reported. Other data is time to treatment discontinuation for systemic treatments which is out of scope for this review.*
Oh, Jong Jin, Byun, Seoksoo, Hong, Sung Kyu et al. (2014) Comparison of robotic and open partial nephrectomy: Single-surgeon matched cohort study. Canadian Urological Association journal = Journal de l'Association des urologues du Canada 8(78): e471-5	- Exclude - For review C. Proportion of patients stage T3 < 90%

Study	Reason
Ohno, Y., Nakashima, J., Ohori, M. et al. (2014) Clinical variables for predicting metastatic renal cell carcinoma patients who might not benefit from cytoreductive nephrectomy: Neutrophil-to-lymphocyte ratio and performance status. International Journal of Clinical Oncology 19(1): 139-145	- Mixed population of SACT pre/post non-pharmacological regimens *Unclear about the SACT treatment or any other treatment in no CN group*
Okita, Kazutaka, Hatakeyama, Shingo, Naito, Sei et al. (2021) External validation of the REMARCC model for the selection of cytoreductive nephrectomy in patients with primary metastatic renal cell carcinoma: A multicenter retrospective study. Urologic oncology 39(12): 836e11-836e17	- Comparator in study does not match that specified in protocol *Study compares CN vs SACT. Combines upfront and deferred CN participants into one CN arm. No subgroup results reported*
Olweny, Ephrem O, Park, Samuel K, Tan, Yung K et al. (2012) Radiofrequency ablation versus partial nephrectomy in patients with solitary clinical T1a renal cell carcinoma: comparable oncologic outcomes at a minimum of 5 years of follow-up. European urology 61(6): 1156-61	- Primary study covered fully by an included systematic review
Onal, Cem, Oymak, Ezgi, Guler, Ozan Cem et al. (2023) Stereotactic body radiotherapy and tyrosine kinase inhibitors in patients with oligometastatic renal cell carcinoma: a multi-institutional study. Strahlentherapie und Onkologie : Organ der Deutschen Rontgengesellschaft ... [et al] 199(5): 456-464	- Review H, SABR exclude - Mixed population of SACT pre/post non-pharmacological regimens
Onishi, Takehisa, Nishikawa, Kouhei, Hasegawa, Yoshihiro et al. (2007) Assessment of health-related quality of life after radiofrequency ablation or laparoscopic surgery for small renal cell carcinoma: a prospective study with medical outcomes Study 36-Item Health Survey (SF-36). Japanese journal of clinical oncology 37(10): 750-4	- Study does not contain a relevant outcome *HRQoL reported as SF36*
Ontario, Health (2023) Robotic-assisted partial nephrectomy for kidney cancer.	- Exclude - wrong population *Population too broad*
Pahouja, Gaurav, Sweigert, Sarah E, Sweigert, Patrick J et al. (2022) Does size matter? Comparing robotic versus open radical nephrectomy for very large renal masses. Urologic oncology 40(10): 456e1-456e7	- Exclude - For review C. Proportion of patients stage T3 < 90%

Study	Reason
Palacios, Diego Aguilar, Zabor, Emily C, Munoz-Lopez, Carlos et al. (2021) Does Reduced Renal Function Predispose to Cancer-specific Mortality from Renal Cell Carcinoma?. European urology 79(6): 774-780	- Data not reported in an extractable format *No denominators for recurrence data*
Palumbo, Carlotta, Mistretta, Francesco A, Knipper, Sophie et al. (2020) Contemporary Cytoreductive Nephrectomy Provides Survival Benefit in Clear-cell Metastatic Renal Cell Carcinoma. Clinical genitourinary cancer 18(6): e730-e738	- Mixed population of SACT pre/post non-pharmacological regimens
Pan, Xiu-Wu, Cui, Xin-Ming, Huang, Hai et al. (2015) Radiofrequency ablation versus partial nephrectomy for treatment of renal masses: A systematic review and meta-analysis. The Kaohsiung journal of medical sciences 31(12): 649-58	- More recent systematic review included that covers the same topic
Panian, Justine, Saidian, Ava, Hakimi, Kevin et al. (2023) Pathological Outcomes of Patients With Advanced Renal Cell Carcinoma Who Receive Nephrectomy Following Immunotherapy. The oncologist	- Not a relevant study design
Panumatrassamee, Kamol, Autorino, Riccardo, Laydner, Humberto et al. (2013) Robotic versus laparoscopic partial nephrectomy for tumor in a solitary kidney: a single institution comparative analysis. International journal of urology : official journal of the Japanese Urological Association 20(5): 484-91	- Exclude - For Review C Proportion of patients stage T3 < 90%
Papadopoulou, Ariadni, Campain, Nicholas, Abu-Ghanem, Yasmin et al. (2024) Not-so-simple nephrectomy: Comparative analysis of radical and simple nephrectomy in a high-volume tertiary referral center. International journal of urology : official journal of the Japanese Urological Association 31(2): 160-168	- Comparator in study does not match that specified in protocol *Comparator is people who had simple nephrectomy; people who had partial nephrectomy were excluded.*
Patel, Hiten D, Kates, Max, Pierorazio, Phillip M et al. (2014) Survival after diagnosis of localized T1a kidney cancer: current population-based practice of surgery and nonsurgical management. Urology 83(1): 126-32	- Study does not contain a relevant intervention *Not clearly active surveillance*

Study	Reason
Patel, Hiten D, Riffon, Mark F, Joice, Gregory A et al. (2016) A Prospective, Comparative Study of Quality of Life among Patients with Small Renal Masses Choosing Active Surveillance and Primary Intervention. The Journal of urology 196(5): 1356-1362	- Study does not contain a relevant outcome *QoL reported as SF12*
Patel, Sunil H, Uzzo, Robert G, Larcher, Alessandro et al. (2020) Oncologic and Functional Outcomes of Radical and Partial Nephrectomy in pT3a Pathologically Upstaged Renal Cell Carcinoma: A Multi-institutional Analysis. Clinical genitourinary cancer 18(6): e723-e729	- Comparator in study does not match that specified in protocol *PN vs RN*
Patton, Michael W, Salevitz, Daniel A, Tyson, Mark D 2nd et al. (2016) Robot-assisted partial nephrectomy for complex renal masses. Journal of robotic surgery 10(1): 27-31	- There is no information on cT or pT stage
Pecoraro, A., Roussel, E., Amparore, D. et al. (2023) New-onset Chronic Kidney Disease After Surgery for Localised Renal Masses in Patients with Two Kidneys and Preserved Renal Function: A Contemporary Multicentre Study. European Urology Open Science 52: 100-108	- Data not reported in an extractable format *No information on participant split between I and C, or baseline characteristics by intervention.*
Pecoraro, A, Amparore, D, Manfredi, M et al. (2022) Partial vs. radical nephrectomy in non-metastatic pT3a kidney cancer patients: a population-based study. Minerva urology and nephrology 74(4): 445-451	- Comparator in study does not match that specified in protocol *Compares PN vs RN in T3 tumours. Not applicable for review C*
Peng, B, Zheng, J-H, Xu, D-F et al. (2006) Retroperitoneal laparoscopic nephrectomy and open nephrectomy for radical treatment of renal cell carcinoma: a comparison of clinical outcomes. Academic journal of second military medical university 27(11): 1167-1169	- Study not reported in English
Peng, Ding, He, Zhi-Song, Li, Xue-Song et al. (2017) Partial nephrectomy for T3aN0M0 renal cell carcinoma: shall we step forward?. International braz j urol : official journal of the Brazilian Society of Urology 43(5): 849-856	- Non-OECD country - Comparator in study does not match that specified in protocol *Compares PN vs RN in T3 tumours. Not applicable for RQ 4a*
Peng, Jonathan; Lalani, Aly-Khan; Swaminath, Anand (2021) Cytoreductive stereotactic body radiotherapy (SBRT) and combination SBRT with	- Systematic review with single arm studies included only

Study	Reason
immune checkpoint inhibitors in metastatic renal cell carcinoma. Canadian Urological Association journal = Journal de l'Association des urologues du Canada 15(8): 281-286	
Petrelli, Fausto, Coinu, Andrea, Vavassori, Ivano et al. (2016) Cytoreductive Nephrectomy in Metastatic Renal Cell Carcinoma Treated With Targeted Therapies: A Systematic Review With a Meta-Analysis. Clinical genitourinary cancer 14(6): 465-472	- Exclude - Result reported in the most updated MA
Petros, Firas G, Venkatesan, Aradhana M, Kaya, Diana et al. (2019) Conditional survival of patients with small renal masses undergoing active surveillance. BJU international 123(3): 447-455	- Data not reported in an extractable format *Insufficient information about comparator arm to include*
Peyronnet, Benoit, Seisen, Thomas, Oger, Emmanuel et al. (2016) Comparison of 1800 Robotic and Open Partial Nephrectomies for Renal Tumors. Annals of surgical oncology 23(13): 4277-4283	- There is no information on cT or pT stage
Piening, A., Al-Hammadi, N., Dombrowski, J. et al. (2023) Survival in Metastatic Renal Cell Carcinoma Treated With Immunotherapy and Stereotactic Radiation Therapy or Immunotherapy Alone: A National Cancer Database Analysis. Advances in Radiation Oncology 8(5): 101238	- Mixed population of SACT pre/post non-pharmacological regimens *Combines participants receiving SACT and conventional radiotherapy in a single arm and compares it to SRT*
Pierorazio, Phillip M, Johnson, Michael H, Ball, Mark W et al. (2015) Five-year analysis of a multi-institutional prospective clinical trial of delayed intervention and surveillance for small renal masses: the DISSRM registry. European urology 68(3): 408-15	- Comparator in study does not match that specified in protocol *Does not separate ablation and nephrectomy in comparator group*
Pierorazio, Phillip M, Johnson, Michael H, Patel, Hiten D et al. (2016) Management of Renal Masses and Localized Renal Cancer: Systematic Review and Meta-Analysis. The Journal of urology 196(4): 989-99	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*
Pignot, Geraldine, Margue, Gaelle, Bigot, Pierre et al. (2025) The effect of tumor downsizing on surgical complexity during nephrectomy after immune checkpoint inhibitors for metastatic renal cell carcinoma. World journal of urology 43(1): 54	- Study did not compare the interventions of interest

Study	Reason
Pignot, Geraldine, Mejean, Arnaud, Bernhard, Jean-Christophe et al. (2015) The use of partial nephrectomy: results from a contemporary national prospective multicenter study. World journal of urology 33(1): 33-40	- Does not contain a population of people with kidney cancer *population has kidney cancer but >10% of participants have stage 3 or higher*
Pignot, Geraldine, Thiery-Vuillemin, Antoine, Albiges, Laurence et al. (2022) Oncological Outcomes of Delayed Nephrectomy After Optimal Response to Immune Checkpoint Inhibitors for Metastatic Renal Cell Carcinoma. European urology oncology 5(5): 577-584	- Comparator in study does not match that specified in protocol - Study does not contain a relevant intervention
Poinas, G, Long, JA, Rébillard, X et al. (2018) [Place of partial nephrectomy assisted by robot: Review of the literature at the time of a request for a specific nomenclature]. Progres en urologie : journal de l'Association francaise d'urologie et de la Societe francaise d'urologie 28(16): 890-899	- Study not reported in English
Posa, A., Lancellotta, V., Paoletti, F. et al. (2022) The Role of Focal Approach as Alternative to Nephron-Sparing Surgery in the Treatment of Stage I Cancer in Renal Graft: Results of a Systematic Review. Turk Onkoloji Dergisi 37(3): 351-360	- More recent systematic review included that covers the same topic *kidney graft patients only*
Prata, F., Ragusa, A., Tedesco, F. et al. (2024) Trifecta Outcomes of Robot-Assisted Partial Nephrectomy Using the New HugoTM RAS System Versus Laparoscopic Partial Nephrectomy. Journal of Clinical Medicine 13(7): 2138	- Exclude - For review C. Proportion of patients stage T3 < 90%
Prins, Fieke M, Kerkmeijer, Linda G W, Pronk, Anne A et al. (2017) Renal Cell Carcinoma: Alternative Nephron-Sparing Treatment Options for Small Renal Masses, a Systematic Review. Journal of endourology 31(10): 963-975	- More recent systematic review included that covers the same topic
Procopio, Giuseppe, Apollonio, Giulia, Cognetti, Francesco et al. (2019) Sorafenib Versus Observation Following Radical Metastasectomy for Clear-cell Renal Cell Carcinoma: Results from the Phase 2 Randomized Open-label RESORT Study. European urology oncology 2(6): 699-707	- Comparator in study does not match that specified in protocol *Compares patients with metastatic rcc treated with sorafenib vs. observation-alone after the radical surgery of metastases*
Pyrgidis, N., Schulz, G.B., Stief, C. et al. (2024) Surgical Trends and Complications in Partial and	- Data not reported in an extractable format

Study	Reason
Radical Nephrectomy: Results from the GRAND Study. Cancers 16(1): 97	*no info on tumour stage (see highlighted text on page 9)study reports length of hospital stay (table 3)we could include and downgrade for applicability To exclude - as there is no information on tumour characteristics*
Qi, Nienie, Wu, Pengjie, Chen, Jinchao et al. (2017) Cytoreductive nephrectomy with thrombectomy before targeted therapy improves survival for metastatic renal cell carcinoma with venous tumor thrombus: a single-center experience. World journal of surgical oncology 15(1): 4	- Study does not contain a relevant intervention
Qu, Hongchen; Wang, Kai; Hu, Bin (2023) Meta analysis of clinical prognosis of radiofrequency ablation versus partial nephrectomy in the treatment of early renal cell carcinoma. Frontiers in oncology 13: 1105877	- Systematic review used as source of primary studies *Sources insufficient*
Qu, Hongchen; Wang, Kai; Hu, Bin (2024) Meta-analysis of clinical outcomes of robot-assisted partial nephrectomy and classical open partial nephrectomy. International journal of surgery (London, England) 110(10): 6268-6281	- Exclude - Review C Patients with localised tumour
Raman, Jay D, Raj, Ganesh V, Lucas, Steven M et al. (2010) Renal functional outcomes for tumours in a solitary kidney managed by ablative or extirpative techniques. BJU international 105(4): 496-500	- Study published before included SR/s for the outcome/s reported
Reese, Stephen W, Eismann, Lennert, White, Charlie et al. (2023) Surgical outcomes of cytoreductive nephrectomy in patients receiving systemic immunotherapy for advanced renal cell carcinoma. Urologic oncology	- Comparator in study does not match that specified in protocol
Reifsnyder, Jennifer E, Ramasamy, Ranjith, Ng, Casey K et al. (2012) Laparoscopic and open partial nephrectomy: complication comparison using the Clavien system. JSLS : Journal of the Society of Laparoendoscopic Surgeons 16(1): 38-44	- There is no information on cT or pT stage
Ricciardulli, Stefano, Ding, Qiang, Zhang, Xu et al. (2015) Evaluation of laparoscopic vs robotic partial nephrectomy using the margin, ischemia and complications score system: a retrospective	- Exclude , review C. Study included only patients T1-T2

Study	Reason
single center analysis. Archivio italiano di urologia, andrologia : organo ufficiale [di] Societa italiana di ecografia urologica e nefrologica 87(1): 49-55	
Richey, S L, Culp, S H, Jonasch, E et al. (2011) Outcome of patients with metastatic renal cell carcinoma treated with targeted therapy without cytoreductive nephrectomy. Annals of oncology : official journal of the European Society for Medical Oncology 22(5): 1048-1053	- Comparator in study does not match that specified in protocol *Compares targeted therapy with chemotherapy and other types of SACT*
Rim, C.H., Cho, W.K., Lee, J.H. et al. (2022) Role of Local Treatment for Oligometastasis: A Comparability-Based Meta-Analysis. Cancer Research and Treatment 54(4): 953-969	- Exclude - wrong population - Exclude - Intervention is out of scope
Rini, Brian I and Campbell, Steven C (2007) The evolving role of surgery for advanced renal cell carcinoma in the era of molecular targeted therapy. The Journal of urology 177(6): 1978-84	- Review article but not a systematic review
Rivero, J Ricardo, De La Cerda, Jose 3rd, Wang, Hanzhang et al. (2018) Partial Nephrectomy versus Thermal Ablation for Clinical Stage T1 Renal Masses: Systematic Review and Meta-Analysis of More than 3,900 Patients. Journal of vascular and interventional radiology : JVIR 29(1): 18-29	- More recent systematic review included that covers the same topic
Roaldsen, Marius, Lohne, Vetle, Stenberg, Thor Allan et al. (2024) Comparing open and robot-assisted partial nephrectomy - a single institution report. BMC urology 24(1): 197	- Exclude, review C. Study included only patients T1-T2
Roussel, Eduard, Laenen, Annouschka, Bhindi, Bimal et al. (2023) Predicting short- and long-term renal function following partial and radical nephrectomy. Urologic oncology 41(2): 110e1-110e6	- Study does not contain a relevant outcome
Roussel, Eduard, Verbiest, Annelies, Milenkovic, Uros et al. (2020) Too good for CARMENA: criteria associated with long systemic therapy free intervals post cytoreductive nephrectomy for metastatic clear cell renal cell carcinoma. Scandinavian journal of urology 54(6): 493-499	- Study does not contain a relevant outcome
Russo, P. (2009) Radical nephrectomy with and without lymph node dissection: Final results of	- Conference abstract

Study	Reason
European Organization for Research and Treatment of Cancer (EORTC) randomized phase 3 trial 30881. Blom JH, van Poppel H, Marechal JM, Jacqmin D, Schroder FH, de Prijck L, Sylvester R, EORTC Genitourinary Tract Cancer Group, St. Franciscus Gasthuis, Rotterdam, The Netherlands. Urologic Oncology: Seminars and Original Investigations 27(1): 102	
Russo, P., Blum, K.A., Weng, S. et al. (2022) Outcomes for Atypical Tumor Recurrences Following Minimally Invasive Kidney Cancer Operations. European Urology Open Science 40: 125-132	- Does not contain a population of people with kidney cancer *All participants were treated for recurrence after partial or radical nephrectomy*
Saeed, S., Shah, S.R., Najeebullah et al. (2024) THE ROLE OF NEPHRON-SPARING SURGERY IN THE MANAGEMENT OF SMALL RENAL MASSES COMPARING THE ONCOLOGICAL OUTCOMES, RENAL FUNCTION PRESERVATION, AND COMPLICATION RATES OF PARTIAL NEPHRECTOMY VERSUS RADICAL NEPHRECTOMY. Journal of Population Therapeutics and Clinical Pharmacology 31(9): 981	- Non-OECD country
Sandbergen, Laura, Spriensma, Alette S, de la Rosette, Jean J et al. (2020) Health-related quality of life in localized renal masses: A matter of sparing nephrons or minimizing the incision?. Urologic oncology 38(2): 43e1-43e11	- Study does not contain a relevant outcome *QoL as SF-36*
Schernuk, Jordan, Garcia Marchinena, Patricio A, Carminatti, Tomas et al. (2023) Renal Cell Carcinoma with Venous Extension: Safety of Laparoscopic Surgery for Thrombus Levels I-IIIa. Journal of endourology 37(7): 786-792	- Comparator in study does not match that specified in protocol
Schiff, Jonathan D, Palese, Michael, Vaughan, E Darracott Jr et al. (2005) Laparoscopic vs open partial nephrectomy in consecutive patients: the Cornell experience. BJU international 96(6): 811-4	- There is no information on cT or pT stage
Scosyrev, Emil, Messing, Edward M, Sylvester, Richard et al. (2014) Renal function after nephron-sparing surgery versus radical nephrectomy: results from EORTC randomized trial 30904. European urology 65(2): 372-7	- Secondary publication of an included study that does not provide any additional relevant information

Study	Reason
Scosyrev, Emil, Wu, Kevin, Levey, Helen R et al. (2014) Overall Survival after Partial Versus Radical Nephrectomy for a Small Renal Mass: Systematic Review of Observational Studies. Urology practice 1(1): 27-34	- More recent systematic review included that covers the same topic
Selim, A.M., Zaghloul, A.S., Aboulkassem, H.A. et al. (2020) Minimally invasive approach in surgical management of renal neoplasms national cancer institute experience. Open Access Macedonian Journal of Medical Sciences 8(b): 1071-1076	- Study does not contain a relevant intervention *Laparoscopic & robotic compared to open nephrectomy irrespective of being partial or radical*
Shah, Paras H, Leibovich, Bradley C, Van Houten, Holly et al. (2019) Association of Partial versus Radical Nephrectomy with Subsequent Hypertension Risk Following Renal Tumor Resection. The Journal of urology 202(1): 69-75	- Primary study covered fully by an included systematic review
Shah, Paras H, Moreira, Daniel M, Patel, Vinay R et al. (2017) Partial Nephrectomy is Associated with Higher Risk of Relapse Compared with Radical Nephrectomy for Clinical Stage T1 Renal Cell Carcinoma Pathologically Up Staged to T3a. The Journal of urology 198(2): 289-296	- Comparator in study does not match that specified in protocol *Compares RN and PN for upstaged T3 tumours.*
Sharma, Gopal, Sharma, Aditya Prakash, Tyagi, Shantanu et al. (2022) Robot-assisted partial nephrectomy for moderate to highly complex renal masses. A systematic review and meta-analysis. Indian journal of urology : IJU : journal of the Urological Society of India 38(3): 174-183	- Exclude - For review C. Proportion of patients stage T3 < 90%
Shaw, Greg L, Hussain, Mahreen, Nair, Rajesh et al. (2012) Performing cytoreductive nephrectomy following targeted sunitinib therapy for metastatic renal cell carcinoma: a surgical perspective. Urologia internationalis 89(1): 83-8	- Comparator in study does not match that specified in protocol
Shchukin, D.V., Lesovoy, V.N., Garagatiy, I.A. et al. (2017) Comparative analysis of oncologic outcomes of radical nephrectomy and nephron-sparing surgery in patients with intravenous extension of tumor into the renal vein. New Armenian Medical Journal 11(2): 58-62	- Non-OECD country - Comparator in study does not match that specified in protocol *Comparing RN vs PN in locally advanced tumours*
Shemshaki, Hamidreza, Al-Mamari, Said Abdallah, Al-Hooti, Qais et al. (2022) Comparison of cytoreductive partial versus radical nephrectomy in metastatic renal cell carcinoma:	- Exclude - Intervention is out of scope

Study	Reason
To be on the horns of a dilemma. Urologia 89(2): 160-166	
Shen, Zhonghua, Xie, Linguo, Xie, Wanqin et al. (2016) The comparison of perioperative outcomes of robot-assisted and open partial nephrectomy: a systematic review and meta-analysis. World journal of surgical oncology 14(1): 220	- Exclude - For review C. Proportion of patients stage T3 < 90%
Shi, Xu, Feng, Dechao, Li, Dengxiong et al. (2021) The Role of Lymph Node Dissection for Non-Metastatic Renal Cell Carcinoma: An Updated Systematic Review and Meta-Analysis. Frontiers in oncology 11: 790381	- Exclude - For review C. Proportion of patients stage T3 < 90%
Shinohara, N, Harabayashi, T, Sato, S et al. (2001) Impact of nephron-sparing surgery on quality of life in patients with localized renal cell carcinoma. European urology 39(1): 114-9	- Data not reported in an extractable format
Shirotake, Suguru, Miyama, Y U, Baba, Yasutaka et al. (2022) Impact of Cytoreductive Nephrectomy Following Nivolumab Plus Ipilimumab Therapy for Patients With Advanced Renal Cell Carcinoma. Anticancer research 42(5): 2727-2735	- Study does not contain a relevant outcome - Not a relevant study design
Shvero, Asaf, Nativ, Ofer, Abu-Ghanem, Yasmin et al. (2018) Oncologic Outcomes of Partial Nephrectomy for Stage T3a Renal Cell Cancer. Clinical genitourinary cancer 16(3): e613-e617	- Comparator in study does not match that specified in protocol *Compared PN vs RN in locally advanced tumours*
Sidoti Abate, Marie Angela, Menold, Hanna Saskia, Neuberger, Manuel et al. (2024) Quality-of-life outcomes of the ROBOtic-assisted versus Conventional Open Partial nephrectomy (ROBOCOP) II trial. BJU international 134(3): 434-441	- Exclude - For review C. Proportion of patients stage T3 < 90%
Simhan, J., Smaldone, M.C., Tsai, K.J. et al. (2012) Perioperative outcomes of robotic and open partial nephrectomy for moderately and highly complex renal lesions. Journal of Urology 187(6): 2000-2004	- There is no information on cT or pT stage
Simone, Giuseppe, Tuderti, Gabriele, Anceschi, Umberto et al. (2017) Oncological outcomes of minimally invasive partial versus minimally invasive radical nephrectomy for cT1-2/N0/M0 clear cell renal cell carcinoma: a propensity score-	- Data not reported in an extractable format

Study	Reason
matched analysis. World journal of urology 35(5): 789-794	
Siva, Shankar, Ali, Muhammad, Correa, Rohann J M et al. (2022) 5-year outcomes after stereotactic ablative body radiotherapy for primary renal cell carcinoma: an individual patient data meta-analysis from IROCK (the International Radiosurgery Consortium of the Kidney). The Lancet. Oncology 23(12): 1508-1516	- Review article but not a systematic review
Siva, Shankar, Louie, Alexander V, Kotecha, Rupesh et al. (2024) Stereotactic body radiotherapy for primary renal cell carcinoma: a systematic review and practice guideline from the International Society of Stereotactic Radiosurgery (ISRS). The Lancet. Oncology 25(1): e18-e28	- Not a relevant study design *Single arm studies only*
Siva, Shankar, Pham, Daniel, Gill, Suki et al. (2012) A systematic review of stereotactic radiotherapy ablation for primary renal cell carcinoma. BJU international 110(11ptb): e737-43	- More recent systematic review included that covers the same topic
Soisrithong, C., Sirisreetreerux, P., Sangkum, P. et al. (2021) Comparative outcomes and predictive assessment of trifecta in open, laparoscopic, and robotic-assisted partial nephrectomy cases with renal cell carcinoma: A 10-year experience at ramathibodi hospital. Research and Reports in Urology 13: 425-435	- Non-OECD country - There is no information on cT or pT stage
Song, Y., Du, C.-X., Zhang, W. et al. (2016) Impact of cytoreductive nephrectomy on survival in patients with metastatic renal cell carcinoma treated by targeted therapy. Chinese Medical Journal 129(5): 530-535	- Data not reported in an extractable format *OS data reported as median and range*
Soomro, Naeem, Lecouturier, Jan, Stocken, Deborah D et al. (2017) Surveillance versus ablation for incidentally diagnosed small renal tumours: the SURAB feasibility RCT. Health technology assessment (Winchester, England) 21(81): 1-68	- Study does not contain a relevant outcome
Spaas, M, Sundahl, N, Rottey, S et al. (2021) Immuno-radiotherapy in solid tumors: preliminary results of the randomized phase 2 CHEERS trial. Radiotherapy and oncology 161: S490-S491	- Conference abstract

Study	Reason
Spaas, Mathieu, Sundahl, Nora, Kruse, Vibeke et al. (2023) Checkpoint Inhibitors in Combination With Stereotactic Body Radiotherapy in Patients With Advanced Solid Tumors: The CHEERS Phase 2 Randomized Clinical Trial. JAMA oncology 9(9): 1205-1213	- Review H SABR exclude
Spiess, Philippe E and Fishman, Mayer N (2010) Cytoreductive nephrectomy vs medical therapy as initial treatment: a rational approach to the sequence question in metastatic renal cell carcinoma. Cancer control : journal of the Moffitt Cancer Center 17(4): 269-78	- Review article but not a systematic review
Sprenkle, Preston C, Power, Nicholas, Ghoneim, Tarek et al. (2012) Comparison of open and minimally invasive partial nephrectomy for renal tumors 4-7 centimeters. European urology 61(3): 593-9	- Exclude - For review C. Proportion of patients stage T3 < 90%
Stellato, M., Santini, D., Verzoni, E. et al. (2021) Impact of Previous Nephrectomy on Clinical Outcome of Metastatic Renal Carcinoma Treated With Immune-Oncology: A Real-World Study on Behalf of Meet-URO Group (MeetUro-7b). Frontiers in Oncology 11: 682449	- Not a relevant study design - Study does not contain a relevant intervention *Mixed CN and radical nephrectomy population*
Stenman, M, Sinclair, G, Paavola, P et al. (2018) Overall survival after stereotactic radiotherapy or surgical metastasectomy in oligometastatic renal cell carcinoma patients treated at two Swedish centres 2005-2014. Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology 127(3): 501-506	- Comparator in study does not match that specified in protocol *Compares SRT with metastasectomy. Mixed SACT population*
Stern, Joshua M, Svatek, Robert, Park, Sangtae et al. (2007) Intermediate comparison of partial nephrectomy and radiofrequency ablation for clinical T1a renal tumours. BJU international 100(2): 287-90	- Primary study covered fully by an included systematic review
Steward, James E, Kern, Sean Q, Cheng, Liang et al. (2021) Clear cell papillary renal cell carcinoma: Characteristics and survival outcomes from a large single institutional series. Urologic oncology 39(6): 370e21-370e25	- Not a relevant study design
Stewart, Grant D, Ang, W Jensen, Laird, Alexander et al. (2012) The operative safety and	- Not a relevant study design *Non-comparative study*

Study	Reason
oncological outcomes of laparoscopic nephrectomy for T3 renal cell cancer. BJU international 110(6): 884-90	
Stroup, Sean P, Palazzi, Kerrin, Kopp, Ryan P et al. (2012) RENAL nephrometry score is associated with operative approach for partial nephrectomy and urine leak. Urology 80(1): 151-6	- Exclude - For review C. Proportion of patients stage T3 < 90%
Su, Jia-Rui, Zhu, Ding-Jun, Liang, Wu et al. (2012) Investigation on the indication of ipsilateral adrenalectomy in radical nephrectomy: a meta-analysis. Chinese medical journal 125(21): 3885-90	- Comparator in study does not match that specified in protocol *Adrenalectomy vs no adrenalectomy*
Suk-Ouichai, Chalairat, Tanaka, Hajime, Wang, Yanbo et al. (2019) Renal Cancer Surgery in Patients without Preexisting Chronic Kidney Disease-Is There a Survival Benefit for Partial Nephrectomy?. The Journal of urology 201(6): 1088-1096	- Data not reported in an extractable format *Stage of kidney cancer was not reported*
Sun, M, Abdollah, F, Shariat, S F et al. (2012) Propensity-score matched comparison of complications, blood transfusions, length of stay, and in-hospital mortality between open and laparoscopic partial nephrectomy: a national series. European journal of surgical oncology : the journal of the European Society of Surgical Oncology and the British Association of Surgical Oncology 38(1): 80-7	- There is no information on cT or pT stage
Sun, Maxine, Becker, Andreas, Tian, Zhe et al. (2014) Management of localized kidney cancer: calculating cancer-specific mortality and competing risks of death for surgery and nonsurgical management. European urology 65(1): 235-41	- Study does not contain a relevant intervention *Non-surgical management is unclear*
Sun, Zi-Jun, Liu, Feng, Wei, Hai-Bin et al. (2023) Laparoscopic partial versus radical nephrectomy for localized renal cell carcinoma over 4 cm. Journal of cancer research and clinical oncology 149(20): 17837-17848	- Non-OECD country
Takagi, T., Kondo, T., Iizuka, J. et al. (2016) Comparison of survival rates in stage 1 renal cell carcinoma between partial nephrectomy and radical nephrectomy patients according to age	- For review A. Study published before 2016 (search date for overall survival)

Study	Reason
distribution: A propensity score matching study. BJU International 117(6): e52-e59	
Takagi, Toshio, Kondo, Tsunenori, Omae, Kenji et al. (2016) Comparison of progression to end-stage renal disease requiring dialysis after partial or radical nephrectomy for renal cell carcinoma in patients with severe chronic kidney disease. International urology and nephrology 48(9): 1421-7	- Study does not contain a relevant outcome
Takahara, K., Fukaya, K., Nukaya, T. et al. (2022) Perioperative and long-term functional outcomes of robot-assisted versus open partial nephrectomy: A single-center retrospective study of a Japanese cohort. Annals of Medicine and Surgery 75: 103482	- There is no information on cT or pT stage
Talenfeld, Adam D, Gennarelli, Renee L, Elkin, Elena B et al. (2018) Percutaneous Ablation Versus Partial and Radical Nephrectomy for T1a Renal Cancer: A Population-Based Analysis. Annals of internal medicine 169(2): 69-77	- Secondary publication of an included study that does not provide any additional relevant information *SEER database - covered by other included studies*
Tam, Andrew W, Kutikov, Alexander, Winoker, Jared S et al. (2022) Propensity-score matched oncological outcomes and patterns of recurrence following open and minimally-invasive partial nephrectomy for renal cell carcinoma. Urologic oncology 40(3): 111e19-111e25	- Exclude - For review C. Proportion of patients stage T3 < 90%
Tan, H.-J., Wolf Jr., J.S., Ye, Z. et al. (2011) Population-level comparative effectiveness of laparoscopic versus open radical nephrectomy for patients with kidney cancer. Cancer 117(18): 4184-4193	- Exclude - review C. Patients with localised tumour
Tan, Jo-Lynn, Frydenberg, Mark, Grummet, Jeremy et al. (2018) Comparison of perioperative, renal and oncologic outcomes in robotic-assisted versus open partial nephrectomy. ANZ journal of surgery 88(3): e194-e199	- Exclude - For review C. Proportion of patients stage T3 < 90%
Tang, Amber B, Lamaina, Margherita, Childers, Christopher P et al. (2021) Perioperative and Long-Term Outcomes of Robot-Assisted Partial Nephrectomy: A Systematic Review. The American surgeon 87(1): 21-29	- Exclude - For Review C Proportion of patients stage T3 < 90%

Study	Reason
Tang, Kun, Yao, Weimin, Li, Heng et al. (2014) Laparoscopic renal cryoablation versus laparoscopic partial nephrectomy for the treatment of small renal masses: a systematic review and meta-analysis of comparative studies. Journal of laparoendoscopic & advanced surgical techniques. Part A 24(6): 403-10	- More recent systematic review included that covers the same topic
Tarkowska, M., Glowacka-Mrotek, I., Peterson, D. et al. (2023) Quality of life at 3 to 5 years after surgical treatment of renal cell carcinoma - a pilot cross-sectional study. Nowotwory 73(4): 201-212	- Study does not contain a relevant outcome *Quality of life was measured with the WHOQOL-BREF questionnaire*
Tatsugami, Katsunori, Shinohara, Nobuo, Kondo, Tsunenori et al. (2015) Role of cytoreductive nephrectomy for Japanese patients with primary renal cell carcinoma in the cytokine and targeted therapy era. International journal of urology : official journal of the Japanese Urological Association 22(8): 736-40	- Mixed population of SACT pre/post non-pharmacological regimens
Teishima, J., Hara, T., Tobe, T. et al. (2023) The impact of primary region resection on the therapeutic outcome of combination regimens for metastatic renal cell carcinoma. Oncology Letters 26(5): 470	- Study does not contain a relevant outcome
Teishima, Jun, Goto, Keisuke, Sekino, Yohei et al. (2022) Prognostic model of upfront cytoreductive nephrectomy in patients with metastatic renal cell carcinoma treated with immune checkpoint inhibitors and/or targeted agents. International urology and nephrology 54(6): 1225-1232	- Data not reported in an extractable format
Teishima, Jun, Ohara, Shinya, Shinmei, Shunsuke et al. (2018) Normalization of C-reactive protein levels following cytoreductive nephrectomy in patients with metastatic renal cell carcinoma treated with tyrosine kinase inhibitors is associated with improved overall survival. Urologic oncology 36(7): 339e9-339e15	- Comparator in study does not match that specified in protocol
Thaidumrong, T. and Duangkae, S. (2018) Comparison of the outcomes of laparoscopic and open nephrectomy in Rajavithi hospital. Journal of the Medical Association of Thailand 101(2supplement2): 103-s108	- Non-OECD country - Exclude - For review C. Proportion of patients stage T3 < 90%

Study	Reason
Thompson, R Houston, Atwell, Tom, Schmit, Grant et al. (2015) Comparison of partial nephrectomy and percutaneous ablation for cT1 renal masses. European urology 67(2): 252-9	- Primary study covered fully by an included systematic review
Tian, J., Zeng, X., Wan, J. et al. (2022) Partial and Radical Nephrectomy Provides Equivalent Oncologic Outcomes in pT3a Renal Cell Carcinoma: A Population-Based Study. Frontiers in Oncology 11: 819098	- Comparator in study does not match that specified in protocol *Compares RN vs PN for upstaged T3 tumours*
Tobert, Conrad M; Riedinger, Christopher B; Lane, Brian R (2014) Do we know (or just believe) that partial nephrectomy leads to better survival than radical nephrectomy for renal cancer?. World journal of urology 32(3): 573-9	- Review article but not a systematic review
Tsai, Sheng-Han, Tseng, Ping-Tao, Sherer, Benjamin A et al. (2019) Open versus robotic partial nephrectomy: Systematic review and meta-analysis of contemporary studies. The international journal of medical robotics + computer assisted surgery : MRCAS 15(1): e1963	- Exclude - For Review C Proportion of patients stage T3 < 90%
Uhlig, A., Hahn, O., Strauss, A. et al. (2018) Treatment for Localized T1a Clear Cell Renal Cell Carcinoma: Survival Benefit for Cryosurgery and Thermal Ablation Compared to Deferred Therapy. CardioVascular and Interventional Radiology 41(2): 277-283	- Secondary publication of an included study that does not provide any additional relevant information *NCDB database - more recent studies from this database included*
Uhlig, Johannes, Kokabi, Nima, Xing, Minzhi et al. (2018) Ablation versus Resection for Stage 1A Renal Cell Carcinoma: National Variation in Clinical Management and Selected Outcomes. Radiology 288(3): 889-897	- Secondary publication of an included study that does not provide any additional relevant information
Uhlig, Johannes, Strauss, Arne, Rucker, Gerta et al. (2019) Partial nephrectomy versus ablative techniques for small renal masses: a systematic review and network meta-analysis. European radiology 29(3): 1293-1307	- More recent systematic review included that covers the same topic
Uprety, Dipesh, Bista, Amir, Smith, Angela L et al. (2018) Cytoreductive Nephrectomy in Elderly Patients with Metastatic Renal Cell Carcinoma in the Targeted Therapy Era. Anticancer research 38(5): 3013-3018	- Study does not contain a relevant intervention *No information about SACT* - Not a relevant study design *Case-control*

Study	Reason
Van Poppel, Hein, Becker, Frank, Cadeddu, Jeffrey A et al. (2011) Treatment of localised renal cell carcinoma. European urology 60(4): 662-72	- Review article but not a systematic review
Vartolomei, Liliana, Cotrus, Andrei, Stanciu, Camelia et al. (2022) Quality of Life and Psychological Distress among Patients with Small Renal Masses. Journal of clinical medicine 11(14)	- Systematic review used as source of primary studies
Veccia, Alessandro, Dell'oglio, Paolo, Antonelli, Alessandro et al. (2020) Robotic partial nephrectomy versus radical nephrectomy in elderly patients with large renal masses. Minerva urologica e nefrologica = The Italian journal of urology and nephrology 72(1): 99-108	- Data not reported in an extractable format *Data was not reported by stage of kidney cancer*
Veltri, Andrea, Gazzera, Carlo, Busso, Marco et al. (2014) T1a as the sole selection criterion for RFA of renal masses: randomized controlled trials versus surgery should not be postponed. Cardiovascular and interventional radiology 37(5): 1292-8	- Not a relevant study design *Noncomparative study*
Venkatramani, Vivek, Koru-Sengul, Tulay, Miao, Feng et al. (2018) A comparison of overall survival and perioperative outcomes between partial and radical nephrectomy for cT1b and cT2 renal cell carcinoma-Analysis of a national cancer registry. Urologic oncology 36(3): 90e9-90e14	- Superceded by Ristau
Verbiest, A., De Meerleer, G., Albersen, M. et al. (2018) Non-surgical ablative treatment of distant extracranial metastases for renal cell carcinoma: A systematic review. Kidney Cancer 2(1): 57-67	- Systematic review used as source of primary studies
Verbiest, A., Roussel, E., Tosco, L. et al. (2020) Long-Term Outcomes in Clear-Cell Renal Cell Carcinoma Patients Treated with Complete Metastasectomy. Kidney Cancer 4(4): 177-183	- Mixed population of SACT pre/post non-pharmacological regimens
Verzoni, Elena, Ratta, Raffaele, Grassi, Paolo et al. (2018) TARIBO trial: targeted therapy with or without nephrectomy in metastatic renal cell carcinoma: liquid biopsy for biomarkers discovery. Tumori 104(5): 401-405	- Not a relevant study design *Protocol for TARIBO trial. On going trial.*
Veys, Ralf, Abdollah, Firas, Briganti, Alberto et al. (2018) Oncological and functional efficacy of nephron-sparing surgery versus radical nephrectomy in renal cell carcinoma stages	- Exclude - wrong population

Study	Reason
>=cT1b: a single institution, matched analysis. Central European journal of urology 71(1): 48-57	
Vilaseca, Antoni, Guglielmetti, Giuliano, Vertosick, Emily A et al. (2020) Value of Partial Nephrectomy for Renal Cortical Tumors of cT2 or Greater Stage: A Risk-benefit Analysis of Renal Function Preservation Versus Increased Postoperative Morbidity. European urology oncology 3(3): 365-371	- Comparator in study does not match that specified in protocol *Compares RN vs PN in locally advanced RCC*
Vitruk, Iurii, Voylenko, Oleg, Stakhovsky, Oleksandr et al. (2023) Advantages of organ-sparing treatment approaches in metastatic kidney cancer. Journal of cancer research and clinical oncology 149(7): 3131-3137	- Comparator in study does not match that specified in protocol *Compares complete CN and partial CN. Inclusion criteria indicates all participants received SACT*
Wang, Agnes J and Bhayani, Sam B (2009) Robotic partial nephrectomy versus laparoscopic partial nephrectomy for renal cell carcinoma: single-surgeon analysis of >100 consecutive procedures. Urology 73(2): 306-10	- There is no information on cT or pT stage
Wang, Dong, Xiao, Zejun, Shou, Jianzhong et al. (2019) Comparison of Laparoscopy and Open Radical Nephrectomy of Renal Cell Cancer. Open medicine (Warsaw, Poland) 14: 392-397	- Exclude - For review C. Proportion of patients stage T3 < 90%
Wang, Li, Li, Kun-Peng, Yin, Shan et al. (2023) Oncologic and perioperative outcomes of laparoscopic versus open radical nephrectomy for the treatment of renal tumor (> 7 cm): a systematic review and pooled analysis of comparative outcomes. World journal of surgical oncology 21(1): 35	- Exclude - For review C. Proportion of patients stage T3 < 90%
Wang, Luke L, Yuen, Kit L, Saitta, Cesare et al. (2024) Comparison of outcomes of radical and partial nephrectomy for sarcomatoid renal cell carcinoma: analysis of the national cancer database. World journal of urology 42(1): 508	- Patients with sarcomatoid RCC and pT3 > 10% (61%)
Wang, Shangqian, Qin, Chao, Peng, Zhihang et al. (2014) Radiofrequency ablation versus partial nephrectomy for the treatment of clinical stage 1 renal masses: a systematic review and meta-analysis. Chinese medical journal 127(13): 2497-503	- More recent systematic review included that covers the same topic

Study	Reason
Wang, Yubin, Ma, Xin, Huang, Qingbo et al. (2016) Comparison of robot-assisted and laparoscopic partial nephrectomy for complex renal tumours with a RENAL nephrometry score >=7: peri-operative and oncological outcomes. BJU international 117(1): 126-30	- Non-OECD country - Exclude - For review C. Proportion of patients stage T3 < 90%
Wang, Yubin, Shao, Jinkai, Ma, Xin et al. (2017) Robotic and open partial nephrectomy for complex renal tumors: a matched-pair comparison with a long-term follow-up. World journal of urology 35(1): 73-80	- Non-OECD country - Exclude - For review C. Proportion of patients stage T3 < 90%
Wang, Zheng, Wang, Ganggang, Xia, Qinghua et al. (2016) Partial nephrectomy vs. radical nephrectomy for renal tumors: A meta-analysis of renal function and cardiovascular outcomes. Urologic oncology 34(12): 533e11-533e19	- More recent systematic review included that covers the same topic
Webb, C.M., Kamel, M., Eltahawy, E. et al. (2015) A comparative study of open, laparoscopic and robotic partial nephrectomy in obese patients. Urology Annals 7(2): 231-234	- There is no information on cT or pT stage
Wei, Xiyi, Ren, Xiaohan, Ding, Yichao et al. (2019) Comparative outcomes of radio frequency ablation versus partial nephrectomy for T1 renal tumors: a systematic review. Translational andrology and urology 8(6): 601-608	- More recent systematic review included that covers the same topic
Weight, Christopher J, Lythgoe, Casey, Unnikrishnan, Raman et al. (2011) Partial nephrectomy does not compromise survival in patients with pathologic upstaging to pT2/pT3 or high-grade renal tumors compared with radical nephrectomy. Urology 77(5): 1142-6	- Comparator in study does not match that specified in protocol *RN vs PN in upstaged T2/T3 tumours. Not applicable for review C.*
Wen, Zhi, Wang, Li, Huang, Jing et al. (2023) Perioperative, functional, and oncologic outcomes after ablation or partial nephrectomy for solitary renal tumors: a systematic review and meta-analysis of comparative trials. Frontiers in oncology 13: 1202587	- Systematic review used as source of primary studies *Solitary kidney only*
Whitson, Jared M; Harris, Catherine R; Meng, Maxwell V (2012) Population-based comparative effectiveness of nephron-sparing surgery vs ablation for small renal masses. BJU international 110(10): 1438-1443	- Secondary publication of an included study that does not provide any additional relevant information *SEER database - more fully covered in another included study*

Study	Reason
Wong, Ruby; Patel, Bijendra; Biyani, Chandra Shekhar (2023) Perioperative outcomes between laparoscopic versus open versus robotic partial nephrectomy: Current Review. Urologia: 3915603231211975	- Exclude - For Review C Proportion of patients stage T3 < 90%
Wu, Jing, Chang, Joshua, Bai, Harrison X et al. (2019) A Comparison of Cryoablation with Heat-Based Thermal Ablation for Treatment of Clinical T1a Renal Cell Carcinoma: A National Cancer Database Study. Journal of vascular and interventional radiology : JVIR 30(7): 1027-1033e3	- Comparator in study does not match that specified in protocol *Compares cryoablation with thermal ablation*
Wu, Xiaorong, Chen, Wei, Huang, Jiwei et al. (2020) Zero ischemia laparoscopic microwave ablation assisted enucleation vs. laparoscopic partial nephrectomy in clinical T1a renal tumor: a randomized clinical trial. Translational cancer research 9(1): 194-202	- Study does not contain a relevant intervention *Microwave ablation group also had tumour enucleation*
Wu, Z., Li, M., Liu, B. et al. (2014) Robotic versus open partial nephrectomy: A systematic review and meta-analysis. PLoS ONE 9(4): e94878	- There is no information on cT or pT stage
Wu, Zhenjie, Li, Mingmin, Qu, Le et al. (2014) A propensity-score matched comparison of perioperative and early renal functional outcomes of robotic versus open partial nephrectomy. PloS one 9(4): e94195	- Non-OECD country - There is no information on cT or pT stage
Wu, Zhenjie, Li, Mingmin, Song, Shangqing et al. (2015) Propensity-score matched analysis comparing robot-assisted with laparoscopic partial nephrectomy. BJU international 115(3): 437-45	- Non-OECD country - There is no information on cT or pT stage
Xia, Leilei, Wang, Xianjin, Xu, Tianyuan et al. (2017) Systematic Review and Meta-Analysis of Comparative Studies Reporting Perioperative Outcomes of Robot-Assisted Partial Nephrectomy Versus Open Partial Nephrectomy. Journal of endourology 31(9): 893-909	- Exclude - For review C. Proportion of patients stage T3 < 90%
Xiao, W.-J., Zhu, Y., Dai, B. et al. (2015) Assessment of survival of patients with metastatic clear cell renal cell carcinoma after radical cytoreductive nephrectomy versus no surgery: a seer analysis. International braz j urol : official	- Mixed population of SACT pre/post non-pharmacological regimens

Study	Reason
journal of the Brazilian Society of Urology 41(2): 288-295	
Xiaobing, Wu, Wentao, Gong, Guangxiang, Liu et al. (2017) Comparison of radiofrequency ablation and partial nephrectomy for tumor in a solitary kidney. BMC urology 17(1): 79	- Non-OECD country
Xu, Haozhe, Xing, Zhuo, Ai, Kai et al. (2024) Patients with high nuclear grade pT1-ccRCC are more suitable for radical nephrectomy than partial nephrectomy: a multicenter retrospective study using propensity score. World journal of surgical oncology 22(1): 24	- Non-OECD country
Xu, L. and Fan, W. (2020) Efficacy of sorafenib combined with radiofrequency ablation in renal cancer and its effects on immunity and inflammation in patients. Journal of B.U.ON. 25(1): 514-519	- Mixed population of SACT pre/post non-pharmacological regimens *No information about SACT in the arm treated with radiofrequency ablation* - Study does not contain a relevant outcome
Yan, Shuai, Yang, Wei, Zhu, Cheng-Mei et al. (2019) Comparison among cryoablation, radiofrequency ablation, and partial nephrectomy for renal cell carcinomas sized smaller than 2 cm or sized 2-4 cm: A population-based study. Medicine 98(21): e15610	- Non-OECD country
Yang, Chao and Liao, Zhaolin (2018) Comparison of Radical Nephrectomy and Partial Nephrectomy for T1 Renal Cell Carcinoma: A Meta-Analysis. Urologia internationalis 101(2): 175-183	- Systematic review used as source of primary studies
Yang, Chia-Min, Chung, Hsiao-Jen, Huang, Yi-Hsiu et al. (2014) Standardized analysis of laparoscopic and robotic-assisted partial nephrectomy complications with Clavien classification. Journal of the Chinese Medical Association : JCMA 77(12): 637-41	- Non-OECD country - There is no information on cT or pT stage
Yang, Chuance, Wang, Zhenlong, Huang, Shanlong et al. (2018) Retroperitoneal Laparoscopic Partial Nephrectomy Versus Radical Nephrectomy for Clinical T1 Renal Hilar Tumor: Comparison of Perioperative Characteristics and Short-Term Functional and Oncologic Outcomes. Journal of	- Non-OECD country

Study	Reason
laparoendoscopic & advanced surgical techniques. Part A 28(10): 1183-1187	
Yang, F.; Zhou, Q.; Xing, N. (2020) Comparison of survival and renal function between partial and radical laparoscopic nephrectomy for T1b renal cell carcinoma. Journal of Cancer Research and Clinical Oncology 146(1): 261-272	- Non-OECD country
Yang, Quancheng, Meng, Fanzheng, Li, Kai et al. (2015) Safety and Efficacy of Thermal Ablation for Small Renal Masses in Solitary Kidney: Evidence from Meta-Analysis of Comparative Studies. PloS one 10(6): e0131290	- More recent systematic review included that covers the same topic
Yang, Yong (2020) Partial Versus Radical Nephrectomy in Patients with Renal Cell Carcinoma: A Systematic Review and Meta-analysis. Urology journal 17(2): 109-117	- More recent systematic review included that covers the same topic
Yang, Yue, Chen, Shouzhen, Chen, Fan et al. (2015) Outcome of radiofrequency ablation over partial nephrectomy for small renal mass (<4 cm): a systematic review and meta-analysis. International journal of clinical and experimental medicine 8(11): 20670-4	- More recent systematic review included that covers the same topic
Yin, Xiaotao, Cui, Liang, Li, Fanglong et al. (2015) Radiofrequency Ablation Versus Partial Nephrectomy in Treating Small Renal Tumors: A Systematic Review and Meta-Analysis. Medicine 94(50): e2255	- More recent systematic review included that covers the same topic
Yoo, Sangjun, You, Dalsan, Jeong, In Gab et al. (2017) Preserving Renal Function through Partial Nephrectomy Depends on Tumor Complexity in T1b Renal Tumors. Journal of Korean medical science 32(3): 495-501	- Primary study covered fully by an included systematic review
Yoon, Young Eun, Lee, Hyung Ho, Kim, Ki Hong et al. (2018) Focal therapy versus robot-assisted partial nephrectomy in the management of clinical T1 renal masses: A systematic review and meta-analysis. Medicine 97(45): e13102	- Study does not contain a relevant intervention
Yoshida, Kazuhiko, Oida, Nao, Kondo, Tsunenori et al. (2024) Surgical and functional outcomes of repeat robot-assisted laparoscopic partial nephrectomy compared with repeat open partial nephrectomy. International journal of urology :	- Exclude review C.Study included only patients T1-T2

Study	Reason
official journal of the Japanese Urological Association 31(4): 355-361	
You, Dalsan, Jeong, In Gab, Song, Cheryn et al. (2015) Analysis of pre-operative variables for identifying patients who might benefit from upfront cytoreductive nephrectomy for metastatic renal cell carcinoma in the targeted therapy era. Japanese journal of clinical oncology 45(1): 96-102	- Data not reported in an extractable format
Youn, C.S., Park, J.M., Lee, J.Y. et al. (2013) Comparison of laparoscopic ra diofrequency a blation and open partial nephrectomy in patients with a small renal mass. Korean Journal of Urology 54(9): 603-608	- Primary study covered fully by an included systematic review
Yu, Jie, Liang, Ping, Yu, Xiao-ling et al. (2014) US-guided percutaneous microwave ablation versus open radical nephrectomy for small renal cell carcinoma: intermediate-term results. Radiology 270(3): 880-7	- Non-OECD country
Yu, Kun, Liu, Meiping, Xie, Zhenguo et al. (2020) Comparison of efficacy and long-term survival of laparoscopic radical nephrectomy with partial nephrectomy in the treatment of patients with early renal cell carcinoma Running title: laparoscopic radical nephrectomy. Journal of B.U.ON. : official journal of the Balkan Union of Oncology 25(2): 1155-1160	- Non-OECD country
Zaid, Harras B, Parker, William P, Safdar, Nida S et al. (2017) Outcomes Following Complete Surgical Metastasectomy for Patients with Metastatic Renal Cell Carcinoma: A Systematic Review and Meta-Analysis. The Journal of urology 197(1): 44-49	- Mixed population of SACT pre/post non-pharmacological regimens
Zaorsky, Nicholas G, Lehrer, Eric J, Kothari, Gargi et al. (2019) Stereotactic ablative radiation therapy for oligometastatic renal cell carcinoma (SABR ORCA): a meta-analysis of 28 studies. European urology oncology 2(5): 515-523	- Exclude - wrong population - Study did not compare the interventions of interest
Zargar, Homayoun, Bhayani, Sam, Allaf, Mohamad E et al. (2014) Comparison of perioperative outcomes of robot-assisted partial nephrectomy and open partial nephrectomy in	- Exclude - For Review C Proportion of patients stage T3 < 90%

Study	Reason
patients with a solitary kidney. Journal of endourology 28(10): 1224-30	
Zeng, Zhiqiang, Ge, Si, Li, Yunxiang et al. (2024) Perioperative and Oncological Outcomes of Partial Versus Radical Nephrectomy for Complex Renal Tumors (RENAL Score >= 7): Systematic Review and Meta-Analysis. Annals of surgical oncology 31(7): 4762-4772	- Systematic review used as source of primary studies
Zhang, Fan, Hu, Jiang-Sheng, Zhang, Kai-Yu et al. (2023) Perioperative, functional, and oncologic outcomes of laparoscopic partial nephrectomy versus open partial nephrectomy for complex renal tumors: a systematic review and meta-analysis. Frontiers in oncology 13: 1283935	- Exclude - For review C. Proportion of patients stage T3 < 90%
Zhang, M., Zhao, Z., Duan, X. et al. (2018) Partial versus radical nephrectomy for T1b-2N0M0 renal tumors: A propensity score matching study based on the SEER database. PLoS ONE 13(2): e0193530	- SEER database overlap
Zhang, Y., Hu, J., Xie, Y. et al. (2022) Selection of Optimal Candidates for Cytoreductive Nephrectomy in Patients with Metastatic Clear Cell Renal Cell Carcinoma: A Predictive Model Based on SEER Database. Frontiers in Oncology 12: 814512	- Mixed population of SACT pre/post non-pharmacological regimens
Zhang, Yu, Bi, Hai, Yan, Ye et al. (2023) Comparative analysis of surgical and oncologic outcomes of robotic, laparoscopic and open radical nephrectomy with venous thrombectomy: a propensity-matched cohort study. International journal of clinical oncology 28(1): 145-154	- Non-OECD country
Zhang, Yuanyuan, Schoenhals, Jonathan, Christie, Alana et al. (2019) Stereotactic Ablative Radiation Therapy (SAbR) Used to Defer Systemic Therapy in Oligometastatic Renal Cell Cancer. International journal of radiation oncology, biology, physics 105(2): 367-375	- Not a relevant study design - Mixed population of SACT pre/post non-pharmacological regimens
Zhang, Yucong, Long, Gongwei, Shang, Haojie et al. (2021) Comparison of the oncological, perioperative and functional outcomes of partial nephrectomy versus radical nephrectomy for clinical T1b renal cell carcinoma: A systematic	- Systematic review used as source of primary studies

Study	Reason
review and meta-analysis of retrospective studies. Asian journal of urology 8(1): 117-125	
Zhang, Zhao, Wu, Hongliang, Yang, Tong et al. (2020) Metastatic renal cell carcinoma patients of T4 stage who are in status of N1 stage or older than 76 years cannot benefit from cytoreductive nephrectomy. BMC cancer 20(1): 844	- Mixed population of SACT pre/post non-pharmacological regimens *No information regarding SACT in both arms*
Zhao, Kaidong, Kim, Eric H, Vetter, Joel M et al. (2020) Laparoscopic cytoreductive nephrectomy is associated with significantly improved survival compared with open cytoreductive nephrectomy or targeted therapy alone. Molecular and clinical oncology 13(6): 71	- Exclude - Outcome was measured using a measure out of scope *OS reported in median months*
Zhao, Z., Wu, W., Duan, X. et al. (2019) The value of cytoreductive nephrectomy on the survival of metastatic renal carcinoma patients based on the number of site-specific metastases. PLoS ONE 14(4): e0215861	- Mixed population of SACT pre/post non-pharmacological regimens *No information about the treatment received by non CN arm reported. The sequence of SACT reported is also not reported.*
Zhou, Minerva, Mills, Abigail, Noda, Christopher et al. (2018) SEER study of ablation versus partial nephrectomy in cT1A renal cell carcinoma. Future oncology (London, England) 14(17): 1711-1719	- Secondary publication of an included study that does not provide any additional relevant information *SEER database - more fully covered in another included study*
Zhuang, W, Chen, J, Li, Y et al. (2019) The effect of cytoreductive partial nephrectomy in elderly patients with metastatic renal cell carcinoma : a systematic review. ResearchSquare	- Exclude - Outcome was measured using a measure out of scope
Zini, Laurent, Perrotte, Paul, Jeldres, Claudio et al. (2008) Nephrectomy improves the survival of patients with locally advanced renal cell carcinoma. BJU international 102(11): 1610-4	- Comparator in study does not match that specified in protocol *Nephrectomy vs no surgery*

Economic studies

HE excluded at full text (n=2)

Study	Reason for exclusion
Health Improvement Scotland (2011) Evidence Note: Is radiofrequency ablation treatment a clinically and cost effective treatment to be offered to people with renal cancer in NHS Scotland? Is radiofrequency ablation treatment a clinically and cost effective treatment to be offered to people with renal cancer in NHSScotland? (york.ac.uk)	-Based on a US health economics study with a quasi-societal perspective and US costs.
Iossa, Vincenzo, Pandolfo, Savio Domenico, Buonopane, Roberto et al. (2025) Robot-assisted partial nephrectomy vs. percutaneous cryoablation for T1a renal tumors: a single-center retrospective analysis of outcomes and costs. International urology and nephrology 57(4): 1097-1104	- Exclude - cost analysis only, did not have a QoL outcome

Appendix K– Research recommendations – full details

K1.1 Research recommendation

What is the clinical effectiveness, cost-effectiveness and impact on quality of life of different types of minimally invasive radical nephrectomy techniques compared to each other in people with locally advanced renal cell carcinoma?

K1.1.1 Why this is important

There is limited evidence currently available about the costs, clinical effectiveness, quality of life related to different types of minimally invasive radical nephrectomy (MIRN) techniques for locally advanced renal cell carcinoma (RCC). Currently available data suggest a small difference in terms of cost and effectiveness between the different MIRN techniques, but was not sufficient to allow recommendations to be made for specific types of MIRN. Further studies may provide evidence about the costs and clinical effectiveness of different minimally invasive surgical techniques and support separate, non-class level recommendations. No evidence on the effect of different types of minimally invasive radical nephrectomy on quality of life was identified in this review. Understanding any effects on quality of life will also help inform discussions around choice of surgical approach.

K1.1.2 Rationale for research recommendation

Table 13 Rationale for research recommendation

Importance to 'patients' or the population	There is uncertainty about the relative effectiveness and costs of different minimally invasive radical nephrectomies compared to each other for people with locally advanced RCC. Understanding for whom minimally invasive radical nephrectomy is best used would be clinically valuable.
Relevance to NICE guidance	Minimally invasive radical nephrectomy has been considered in this review and there is a small volume of evidence of very low quality about effectiveness and costs of different minimally invasive radical nephrectomy techniques compared to each other. The existing evidence is mainly based on retrospective cohort studies, which have issues with confounding. In addition, the included studies used datasets ranging from 1980 to 2020 and practice changed substantially during this time.
Relevance to the NHS	The outcome would affect approaches to surgery for locally advanced RCC provided by the NHS.
National priorities	Low
Current evidence base	Minimal data of very low quality
Equality considerations	None known

K1.1.3 Modified PICO table

Table 14: Modified PICO table

Population	Adults (18 years or older) with a diagnosis of locally advanced RCC confirmed according to the clinical or pathological TNM classification (usually stage 3 [T1-T2 N1 M0, T3 any N, M0]) and who are eligible for surgery.
Intervention	Minimally invasive radical nephrectomy techniques
Comparator	Other minimally invasive radical nephrectomy techniques
Outcomes	• Disease-free survival • Overall survival • Surgical complications • Duration of hospital stay • Quality of life • Cost effectiveness
Study design	Prospective study (RCT or cohort study)