

INTRODUCTION

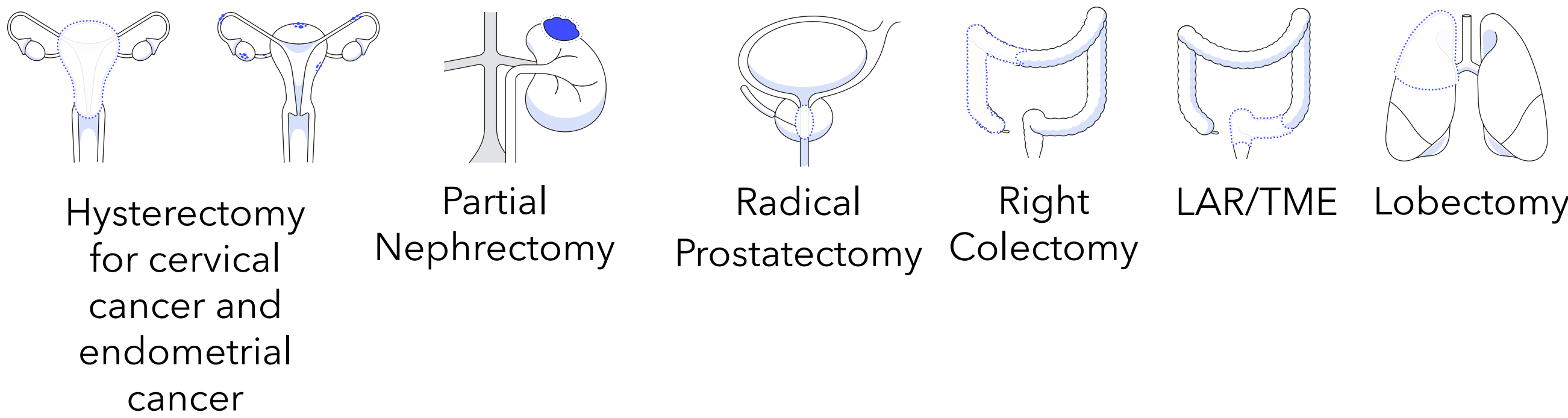
Robotic-assisted surgery with da Vinci surgical systems was introduced in Europe more than 20 years ago. A recent systematic literature review and meta-analysis, COMPARE study, highlighted the value of dV-RAS for the global population. However, payers and decision makers are interested in what the regional value of dV-RAS is compared to the standard of care.

AIM

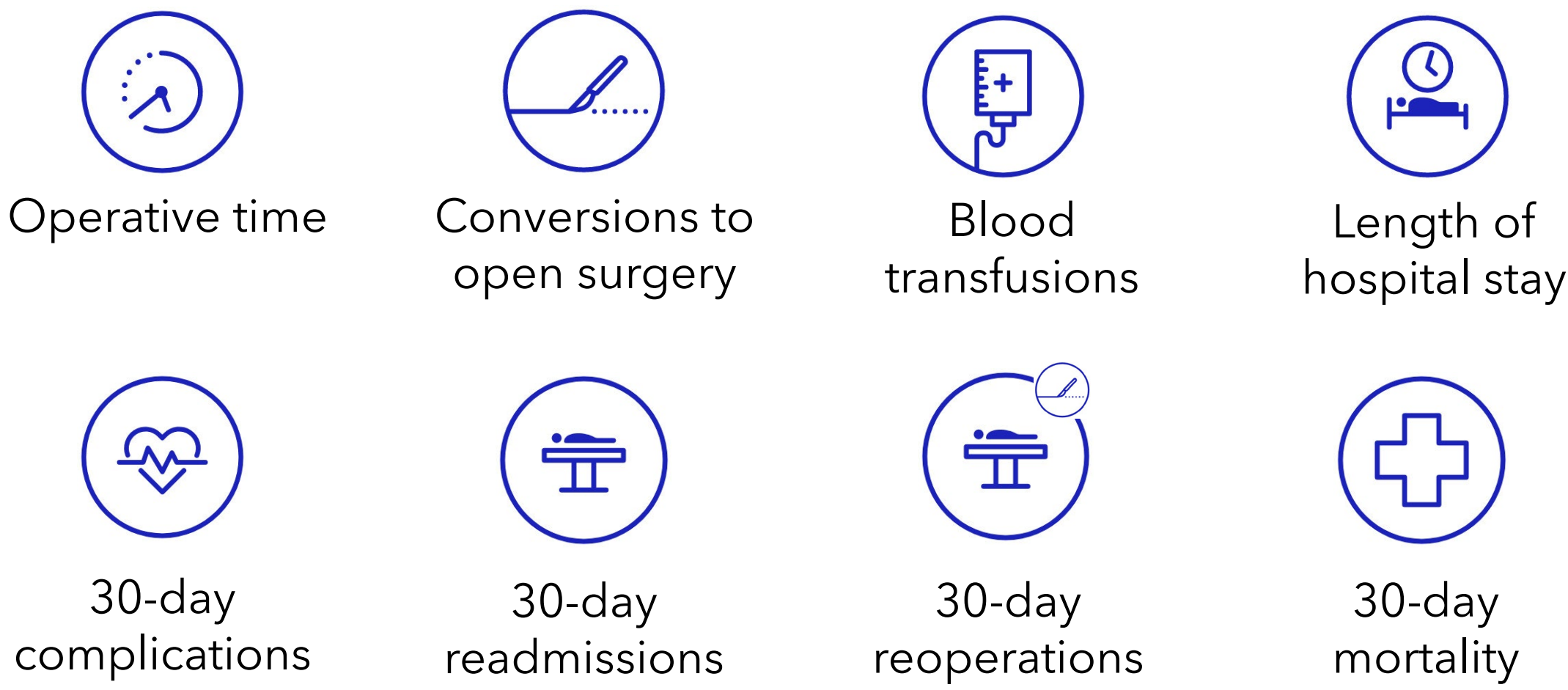
To compare the perioperative outcomes of da Vinci robotic-assisted surgery (dV-RAS) with Laparoscopic (LAP) / Video-assisted thoracoscopic (VATS) or open surgery for 7 malignant procedures for the European population.

METHODS

- PubMed, Scopus and EMBASE were systematically searched from 2010 to December 31, 2022 following PRISMA guidelines (PROSPERO#CRD42023466759).
- Subset analysis of the COMPARE study
- Studies published on European patients undergoing:



- Outcomes measured:



- Data from randomized, prospective, and database studies were pooled as odds ratios (OR) or mean differences (MD) in R using fixed-effect or random-effects (heterogeneity significant).
- Bias was assessed using ROBINS-I/RoB 2 tools.

RESULTS

- **78 publications** including:

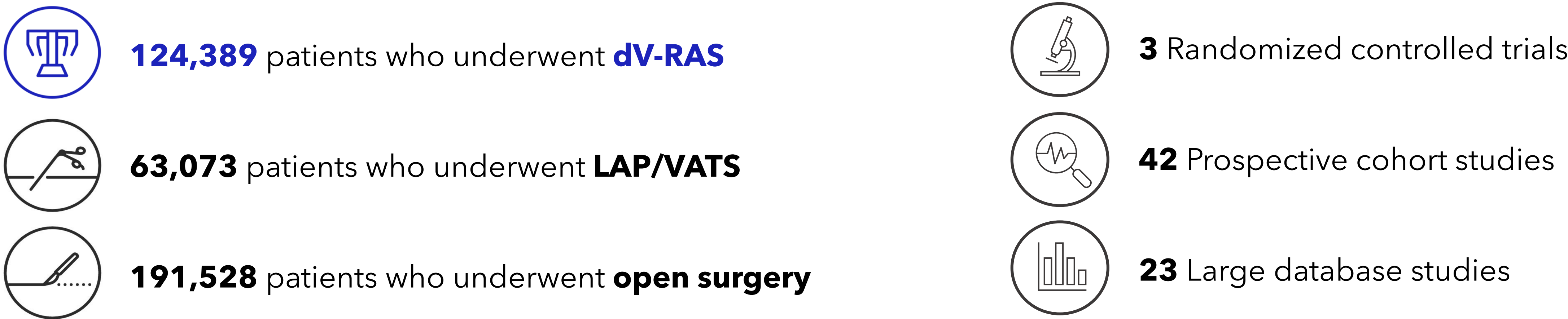


Figure 1. Number of included publications by country

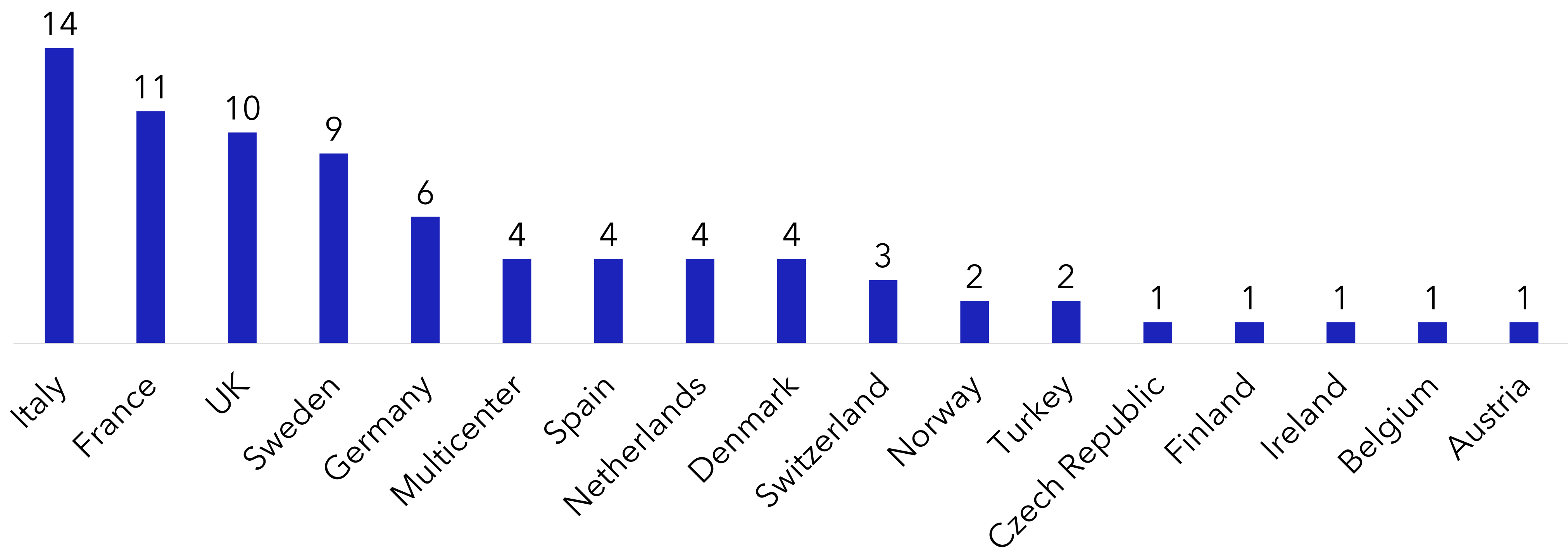


Table 1. Meta-analysis results by outcome and comparison

Outcome	Comparison	Nr. of studies	dV-RAS N	LAP/VATS Open N	Weighted effect size Mean Difference / Odds Ratio [95%CI]	Effect p-value	Heterogeneity	Model	Conclusion
Operative time (min)	dV-RAS vs LAP/VATS	24	3344	2700	MD = 3.54 [-5.72, 12.80]	0.45	p < 0.01; I ² = 94%	Random	No difference
	dV-RAS vs Open	28	9210	7693	MD = 49.79 [34.24, 65.35]	<0.01	p < 0.01; I ² = 97%	Random	Favors open
Conversions to open (%)	dV-RAS vs LAP/VATS	29	6786	12499	OR = 0.51 [0.38, 0.70]	<0.01	p < 0.01; I ² = 54%	Random	Favors dV-RAS
	dV-RAS vs Open	Not applicable							
Blood transfusions (%)	dV-RAS vs LAP/VATS	18	59142	38486	OR = 0.65 [0.60, 0.70]	<0.01	p=0.78; I ² = 0%	Fixed	Favors dV-RAS
	dV-RAS vs Open	25	66639	176313	OR = 0.19 [0.16, 0.23]	<0.01	p < 0.01; I ² = 54%	Random	Favors dV-RAS
Length of hospital stay (days)	dV-RAS vs LAP/VATS	26	52229	15452	MD = -0.50 [0.80, 0.20]	<0.01	p < 0.01; I ² = 98%	Random	Favors dV-RAS
	dV-RAS vs Open	28	55560	15595	MD = -2.09 [-2.50, -1.68]	<0.01	p < 0.01; I ² = 96%	Random	Favors dV-RAS
Postoperative complications 30-days (%)	dV-RAS vs LAP/VATS	26	2194	24097	OR = 1.002 [0.92, 1.10]	0.96	p = 0.10; I ² = 27%	Fixed	No difference
	dV-RAS vs Open	21	22487	21077	OR = 0.58 [0.41, 0.82]	<0.01	p < 0.01; I ² = 88%	Random	Favors dV-RAS
Reoperations 30-days (%)	dV-RAS vs LAP/VATS	9	2060	1961	OR = 1.18 [0.89, 1.56]	0.26	p = 0.88; I ² = 0%	Fixed	No difference
	dV-RAS vs Open	11	28905	150777	OR = 1.003 [0.88, 1.15]	0.96	p = 0.54; I ² = 0%	Fixed	No difference
Readmissions 30-days (%)	dV-RAS vs LAP/VATS	9	40892	9698	OR = 0.71 [0.55, 0.92]	0.01	p < 0.01; I ² = 76%	Random	Favors dV-RAS
	dV-RAS vs Open	8	40893	10253	OR = 0.50 [0.41, 0.62]	<0.01	p < 0.01; I ² = 71%	Random	Favors dV-RAS
Mortality 30-days (%)	dV-RAS vs LAP/VATS	18	24396	8476	OR = 0.68 [0.42, 1.09]	0.11	p = 0.25; I ² = 21%	Fixed	No difference
	dV-RAS vs Open	13	50512	167635	OR = 0.61 [0.40, 0.93]	0.02	p = 0.45; I ² = 0%	Fixed	Favors dV-RAS

RESULTS

- **Compared to LAP/VATS**, patients undergoing dV-RAS had:

- ↓ Conversions by **49%**
- ↓ Blood transfusions by **35%**
- ↓ Length of stay by average **0.5 days**
- ↓ 30-day readmissions by **29%**

- All other outcomes were comparable

- **Compared to Open**, patients undergoing dV-RAS had:

- ↑ Operative time by **50 minutes**
- ↓ Blood transfusions by **81%**
- ↓ Length of stay by average **2 days**
- ↓ 30-day postoperative complications by **42%**
- ↓ 30-day readmissions by **50%**
- ↓ 30-day morality by **39%**

- All other outcomes were comparable

CONCLUSIONS

- Available evidence for the European population concludes that dV-RAS is better or equivalent to LAP/VATS or open for select perioperative outcomes across 7 malignant procedures.
- These findings should be taken into consideration by researchers, payers, policy makers, and Health Technology Agencies in their decision-making processes.

TABLES & REFERENCES

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