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Updates on the cost effectiveness of glue and MOCA techniques vs thermal ablation

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Imperial College,
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London

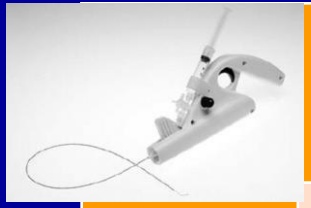
The London Vein Service

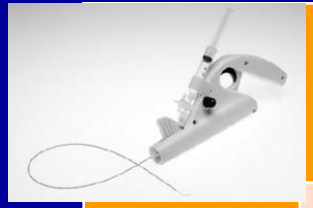
Disclosures

- Grants:- NIHR, RCS, EVF, Circulation foundation, Stroke association.

- Commercial support:- Biolas, Vascular Insights, Urgo Labortoire, Acergy, Medtronic, Firstkind, Veniti.


ideal

	Sample Size	Duration	Occlusion	Venous Clinical Severity Score (VCSS)	Patient Pain Scores (VAS 100mm or 10 point)	Return to Normal Activities/ Work	Major Adverse Events
Elias et al, 2013[11]	29 patients 30 limbs	2 years	Immediate- 100% 6 months- 96.7% 2 years – 96%	N/A	No complaints of pain	N/A	None
Ozen et al, 2014[15]	63 patients 73 limbs	2 years	Immediate- 98% 6 months- 94% 1 year- 95% 2 years- 95%	6 Months: -3.2 1 year: -1.2 2 years: -1.1	N/A	N/A	None
Boersma et al, 2012[12]	50 patients	1 year	Immediate- 100% 6 Week- 100% 1 Year- 94%	Baseline- 3.0 6 weeks- 1.0 1 year 1.0	2	N/A	None
Bootun et al, 2014[6]	117 patients 119 limbs (59 ClariVein limbs)	1 month	92%	N/A	19.3 mm	3.5 days/ 5.3 days *patients in Great Britain historically take more time for recovery	None
Van Eekeren et al, 2014[9]	92 patients 106 limbs	6 months	Immediate- 100% 6 months- 93.2% 1 year- 88.2%	Baseline- 4.0 6 months- 1.0 1 year- 1.0	20 mm 14 days- 7.5mm	1 day/ 1 day	None
Bishawi et al, 2013[10]	126 patients	6 months	Immediate- 100% 6 months- 94%	Baseline- 9.0 1 week- 6.5 3 months- 4.0 6 months- 3.0	2 1 week- >1	N/A	None
Van Eekeren et al, 2013[8]	68 patients (34 ClariVein)	6 weeks	N/A	Baseline- 3.0 6 weeks- 1.0	22 3 days- 6.2 14 days- 4.8	1 day/ 1 day	None
Van Eekeren et al, 2011[13]	25 patients 30 limbs	6 weeks	Immediate- 100%	Baseline 3.0 6 weeks 1.0	4 7 days- 2 mm	N/A	None
Vun et al, 2014[7]	127 patients 147 limbs (57 ClariVein limbs)	Immediate	91%	N/A	1	N/A	None



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- 1000 + cases
- overall 95% + closure rate
- Marked improvement in VCSS
- Safe
- Rapid recovery

Clinical Studies with VenaSeal™System

Feasibility Study

- 38 Patients, enrollment completed Aug. 2011
- 1, 3, 6, 12, 24 and 36 month follow-ups
- Primary endpoint: Safety: rate of serious adverse events, Efficacy: vein closure during follow-up

eSCOPE
(European multicenter study)

- 70 patients, enrollment completed Sept. 2012
- 2 day, 1, 3, 6, 12, 24 and 36 month follow-ups
- Primary endpoint: closure w/o use of sedation, tumescent anesthesia or compression stockings

VeClose
(U.S. pivotal trial)

- 242 patients, enrollment completed Sept. 2013
- 3 day, 1, 3, 6, 12 months & 2, 3 year follow-ups
- Primary endpoint: non-inferior to RFA in GSV closure
- Secondary endpoint: superiority in reduction of post procedural pain and bruising

Clinical Studies with VenaSeal™System

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Venaseal equivalent initial clinical results to Venefit

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PROS
CONS

Quality of life & occlusion rates @ 1 year

Technique	Quality of life improvement	Occlusion rate greater than 90%
RFA	+++	√√
Laser	+++	√√
Foam	++ (+)	XX
Steam	??	X
MOCA	+++	√√
Glue	+++	√ √

Endovenous mechanochemical ablation for varicose veins

Interventional procedure guidance

Published: 25 May 2016

nice.org.uk/guidance/ipg557

NHS
National Institute for Health and Clinical Excellence

1 Recommendations

1.1 Current evidence on the safety and efficacy of endovenous mechanochemical ablation for varicose veins appears adequate to support the use of this procedure provided that standard arrangements are in place for consent, audit and clinical governance. Clinicians are encouraged to collect longer-term follow-up data.

Original article

Cost-effectiveness of traditional and endovenous treatments for varicose veins

M. S. Gohel[1], D. M. Epstein[2] and A. H. Davies[1]

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(e-mail: a.h.davies@imperial.ac.uk)

Eur J Vasc Endovasc Surg (2015) 50, 794—801

A Cost-effectiveness Analysis of Surgery, Endothermal Ablation, Ultrasound-guided Foam Sclerotherapy and Compression Stockings for Symptomatic Varicose Veins

G. Marsden [a,f,*], M. Perry [a], A. Bradbury [b], N. Hickey [c], K. Kelley [a], H. Trender [d], D. Wonderling [a], A.H. Davies [e]

[a] National Clinical Guideline Centre, Royal College of Physicians, London, UK
[b] University Department of Vascular Surgery, University of Birmingham, Solihull, UK
[c] Worcestershire Royal Hospital, Worcester, UK
[d] Sheffield Vascular Institute, Sheffield Teaching Hospital Foundation Trust, Sheffield, UK
[e] Department of Surgery & Cancer, Imperial College & Imperial College NHS Trust, Charing Cross Hospital, London, UK

COST-EFFECTIVENESS OF RADIOFREQUENCY ABLATION VERSUS LASER FOR VARICOSE VEINS

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Original article

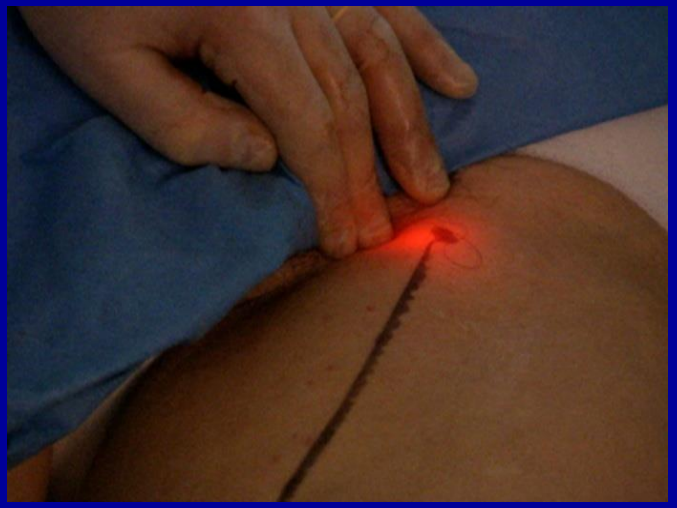
Cost-effectiveness of ultrasound-guided foam sclerotherapy, endovenous laser ablation or surgery as treatment for primary varicose veins from the randomized CLASS trial

E. Tassie[1], G. Scotland[1,2], J. Brittenden[3], S. C. Cotton[2], A. Elders[2], M. K. Campbell[2], B. Campbell[4], M. Gough[5], J. M. Burr[6] and C. R. Ramsay[2] on behalf of the CLASS study team

[1]Health Economics Research Unit, [2]Health Services Research Unit and [3]Division of Applied Medicine, University of Aberdeen, Aberdeen, [4]Royal Devon and Exeter Hospital and University of Exeter Medical School, Exeter, [5]Vascular Surgery, Vascular Laboratory, St James's University Hospital, Leeds, and [6]School of Medicine, Medical and Biological Sciences, University of St Andrews, St Andrews, UK
Correspondence to: Ms E. Tassie, Health Economics Research Unit, University of Aberdeen, Foresterhill, Aberdeen AB25 2ZD, UK
(e-mail: e.tassie@abdn.ac.uk)

Treatment options

Surgery

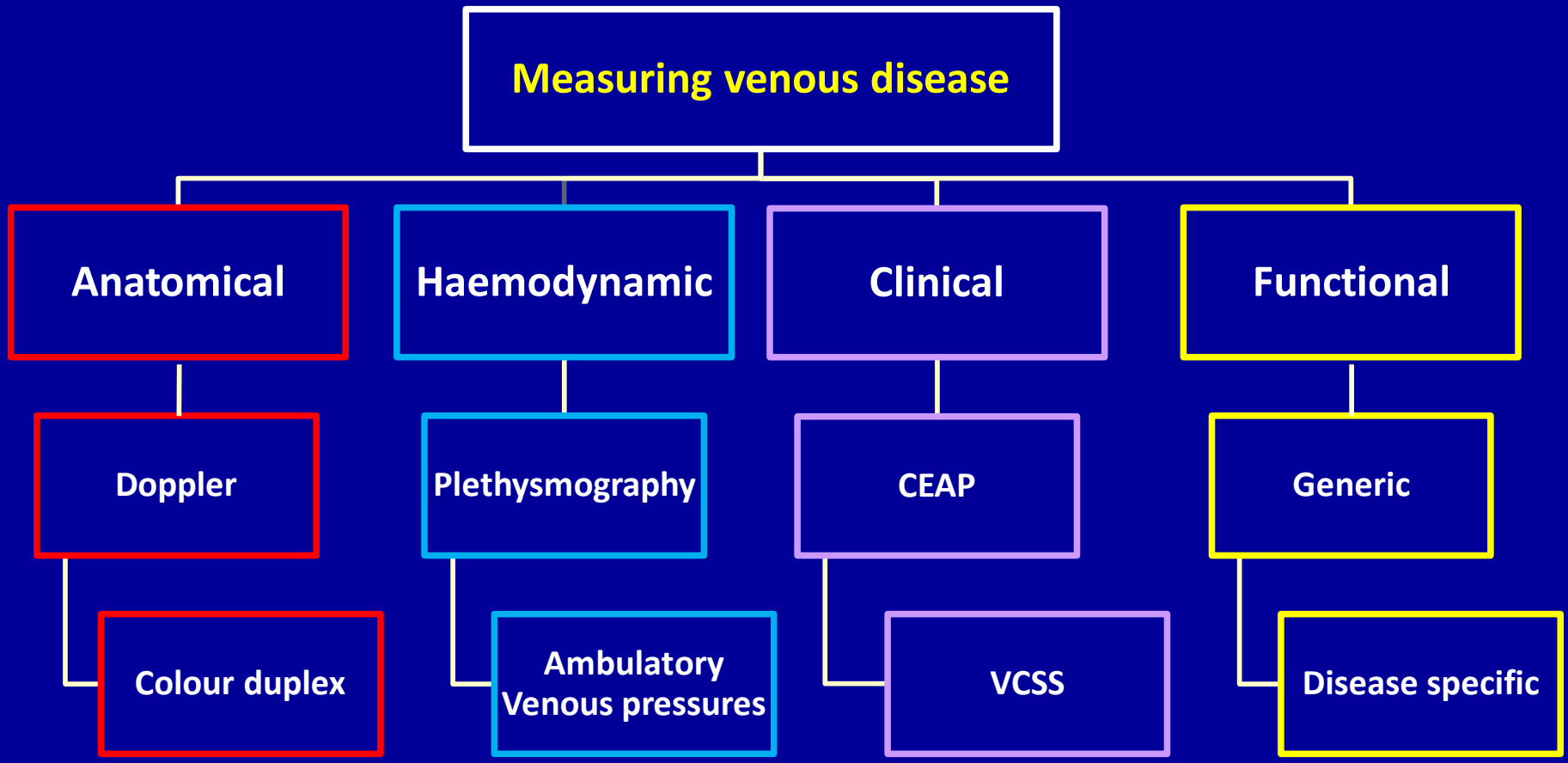


Laser

Radiofrequency

Sclerotherapy

How to measure outcomes in venous disease?



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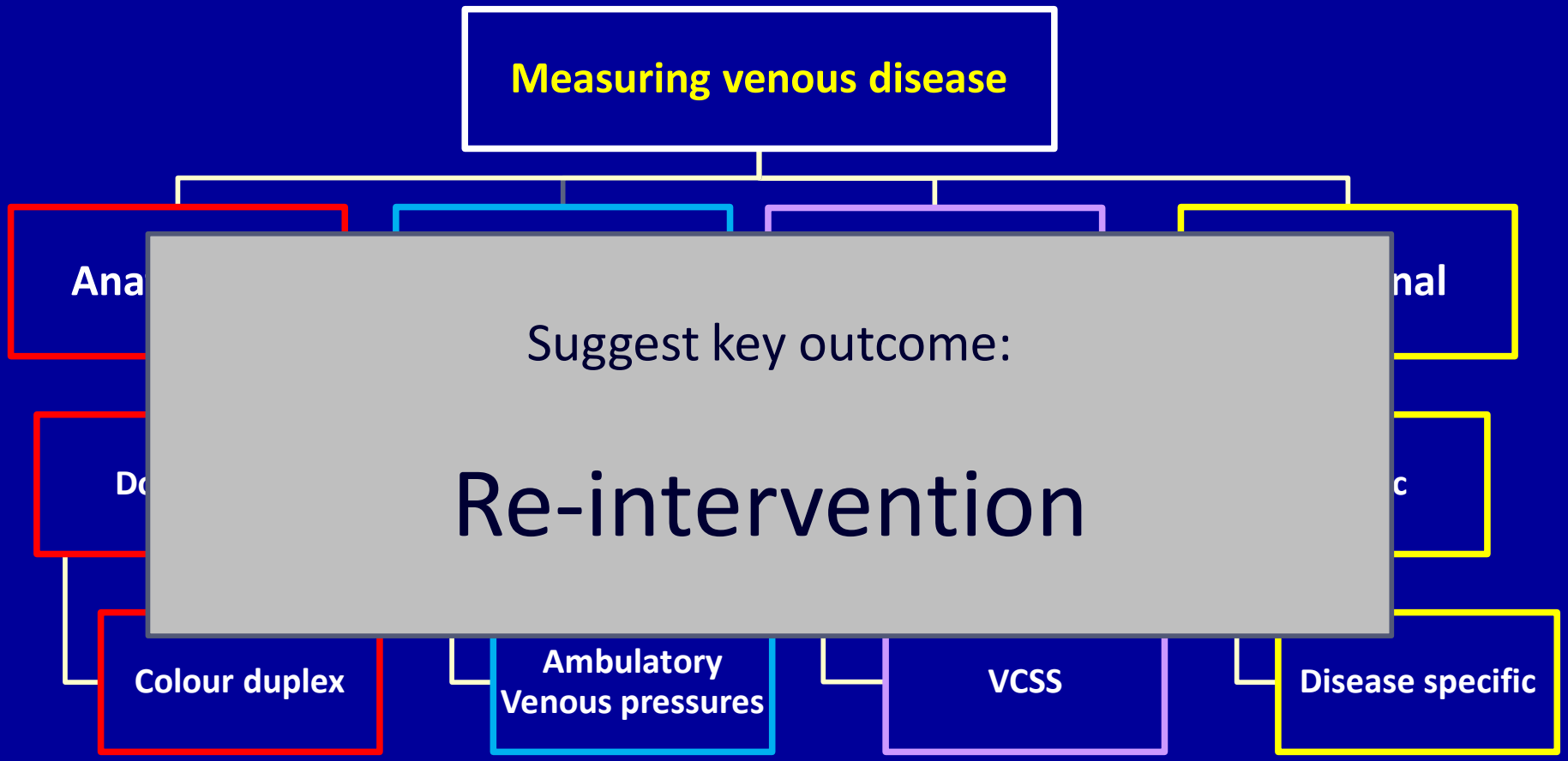

Aims

1. Systematic review of the literature with particular emphasis on MOCA and cyanoacrylate
2. Determine the cost-effectiveness of the newer non-thermal interventions

Methods

- Systematic review of the literature to determine the relative effectiveness of each intervention (RFA, EVLA, Surgery, MOCA, CAE and Conservative care)
  - Protocol on PROSPERO: CRD42015029618

- Cost-effectiveness of each intervention

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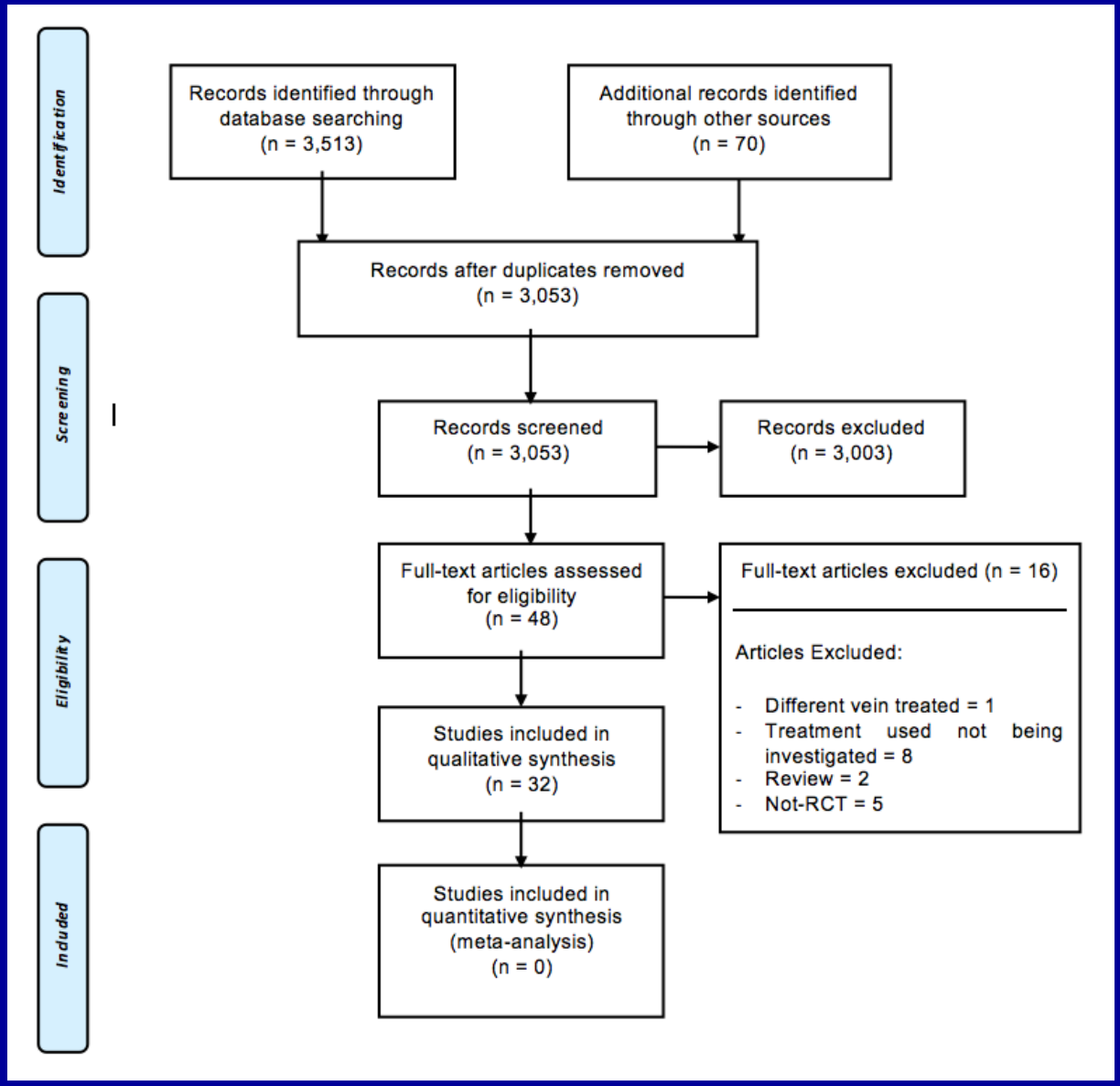
Results

- 33 RCTs included
- Further 10 non-RCTs evaluating MOCA and CAE
- Intervention on truncal vein re-intervention available from 16 studies (13 RCTs and 3 non-RCTs)
- 1 non-RCT of re-intervention post-MOCA and no studies on re-intervention post-CAE

Prisma Diagram



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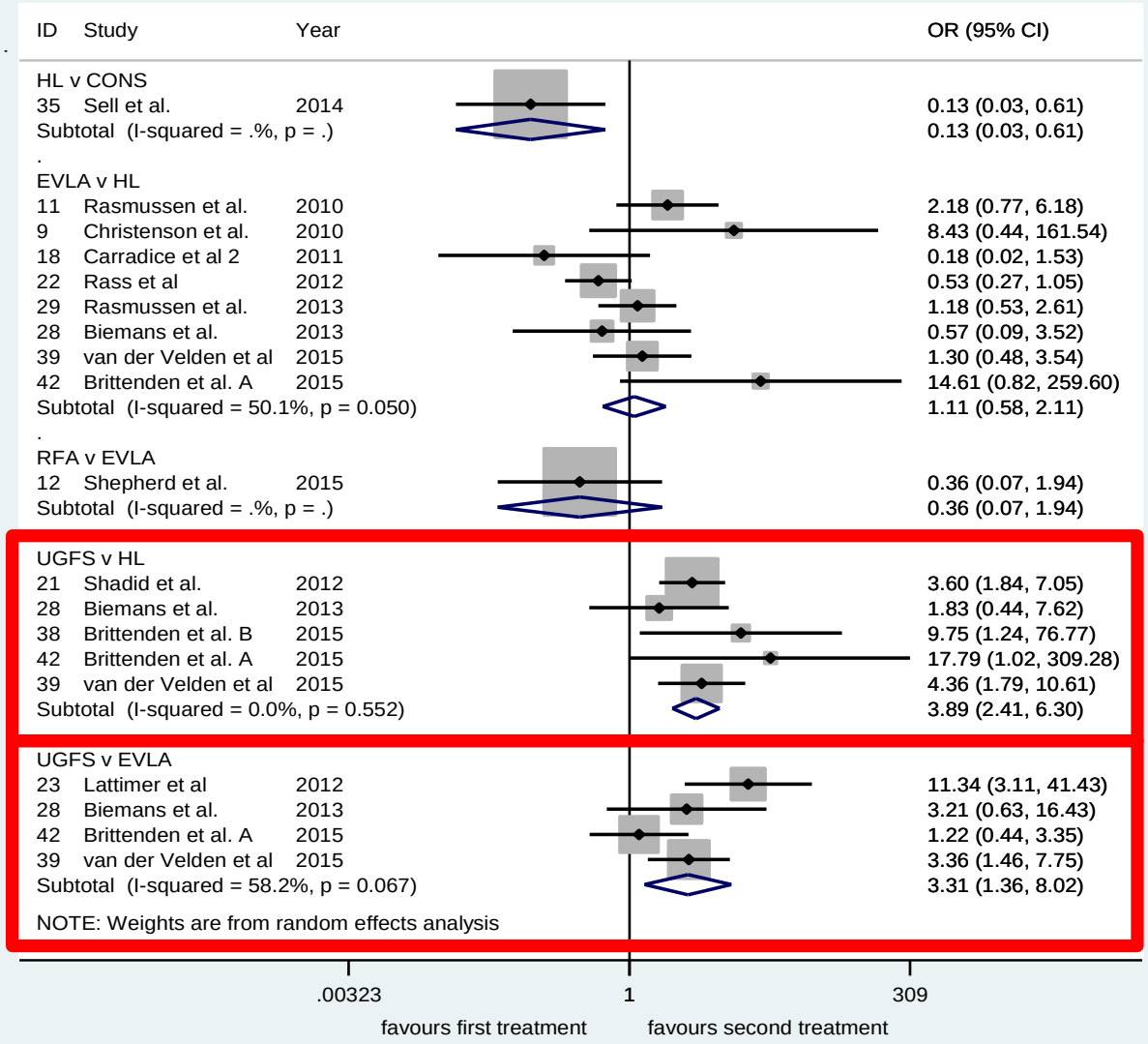
Truncal Vein Re-intervention



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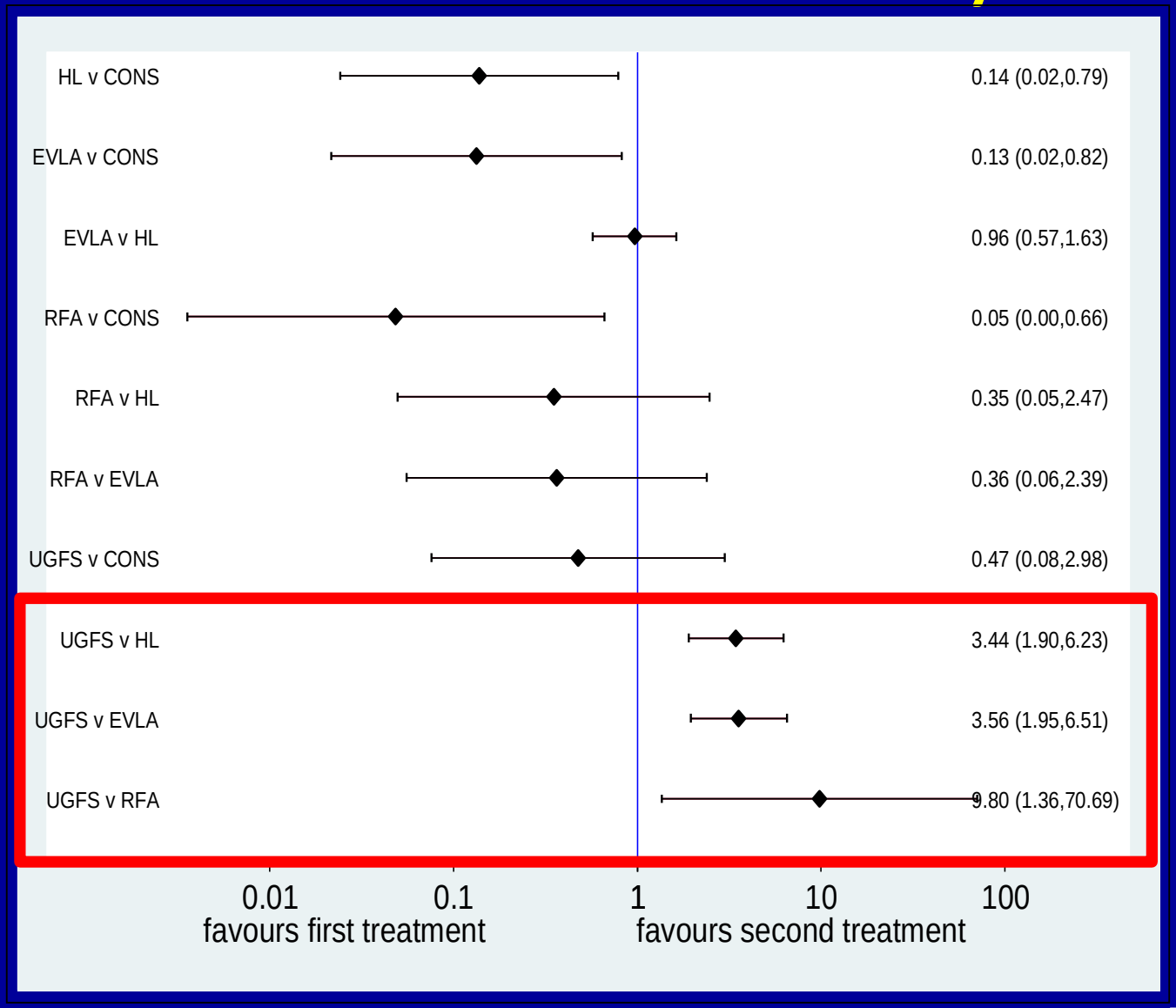
Network Meta-Analysis



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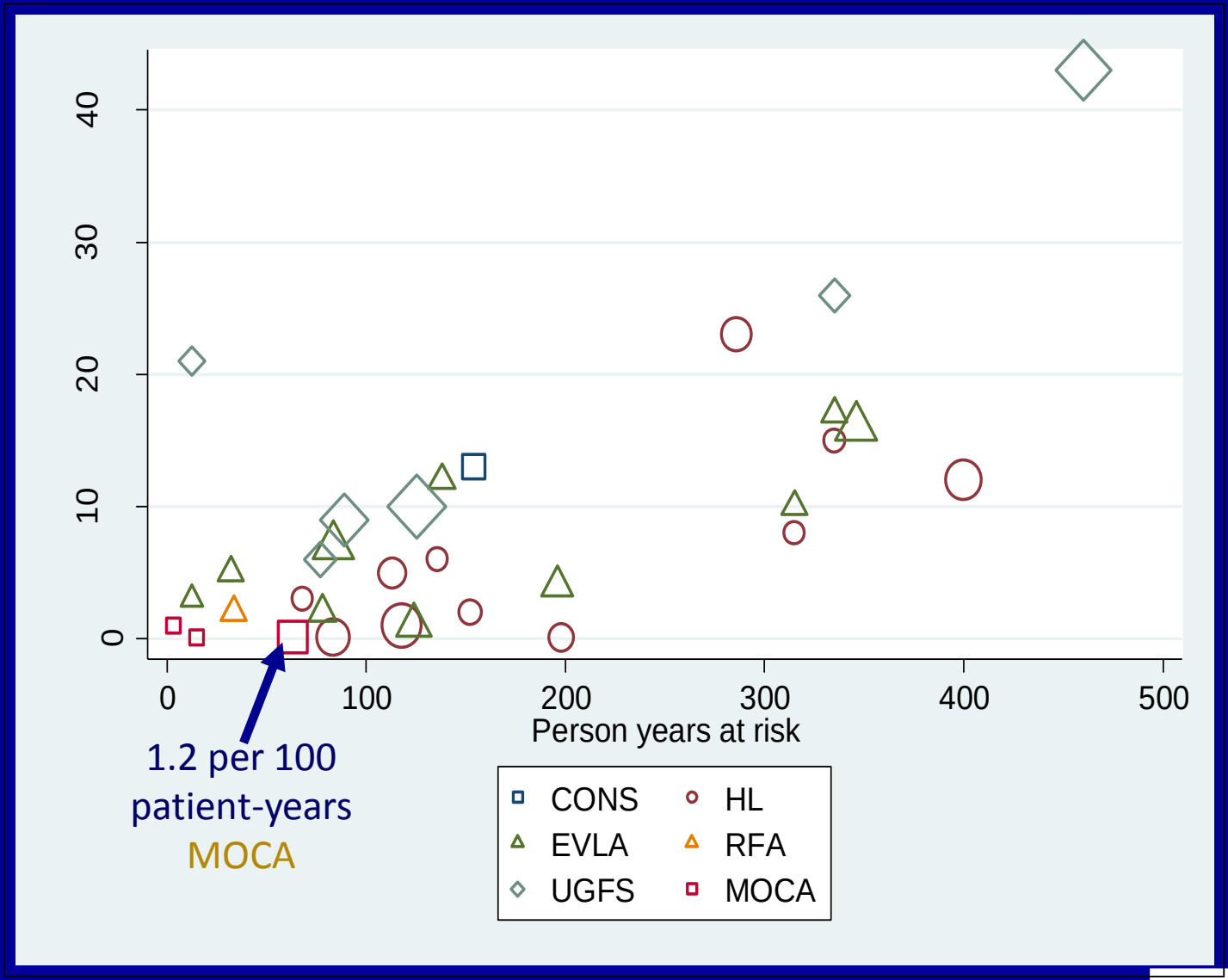
Re-intervention



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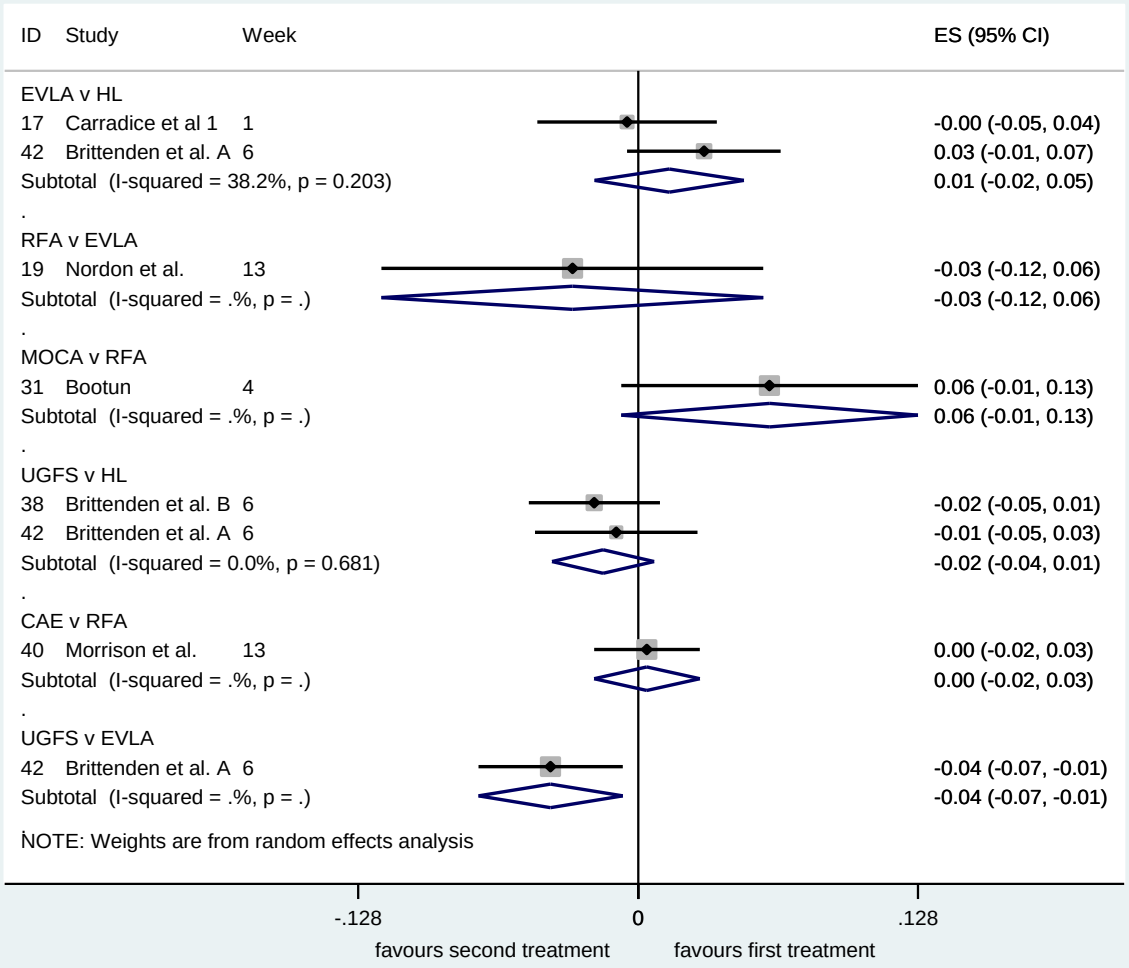
Generic Quality of Life – EQ-5D



EQ-5D-3L index

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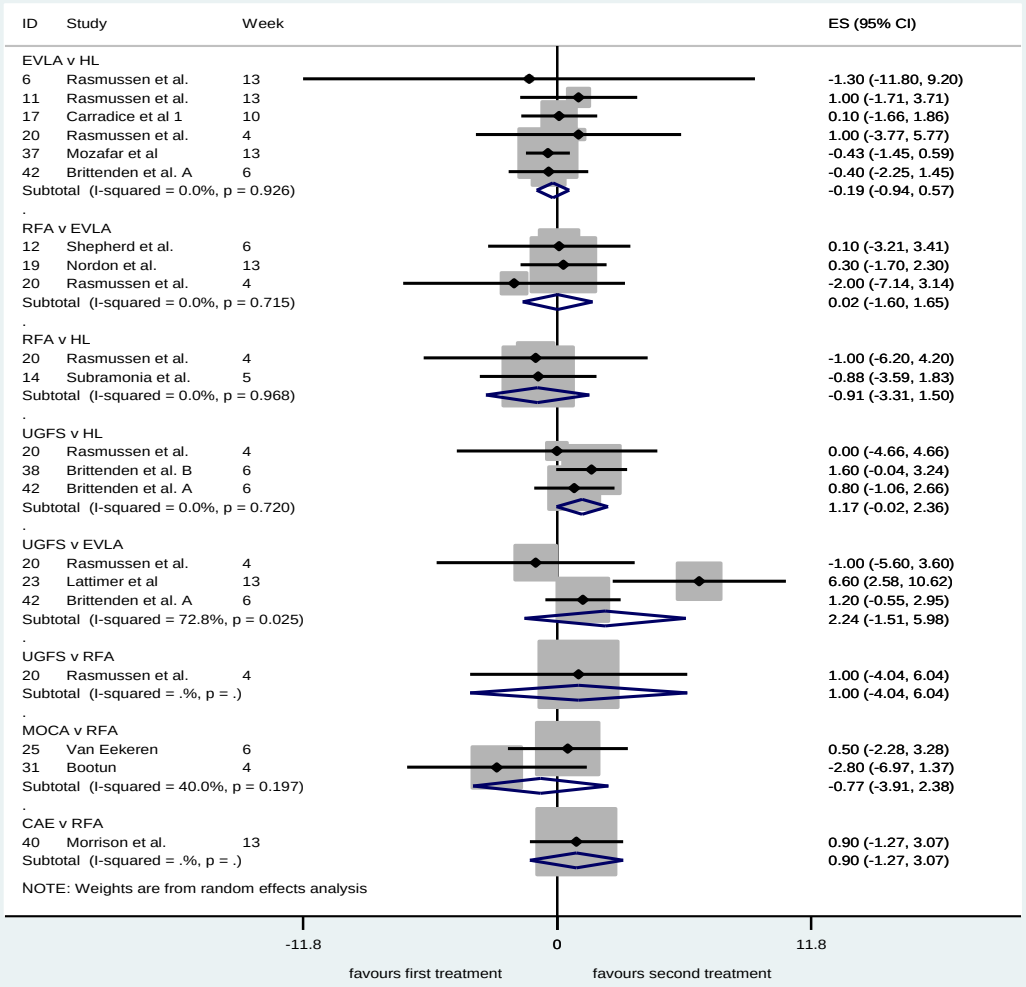
Disease-Specific QoL - AVVQ



Aberdeen Venous Vein Score

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Duration of Procedure

	Difference in operative time (minutes)	SE	z	P value	Confidence Interval	
EVLA	6.0	6.4	0.9	0.346	-6.5	18.6
RFA	5.2	6.5	0.8	0.428	-7.6	18.0
UGFS	-24.8	8.7	-2.9	0.004	-41.9	-7.7
MOCA	-5.5	11.3	-0.5	0.628	-27.6	16.6
CAE	10.2	16.2	0.6	0.531	-21.6	41.9

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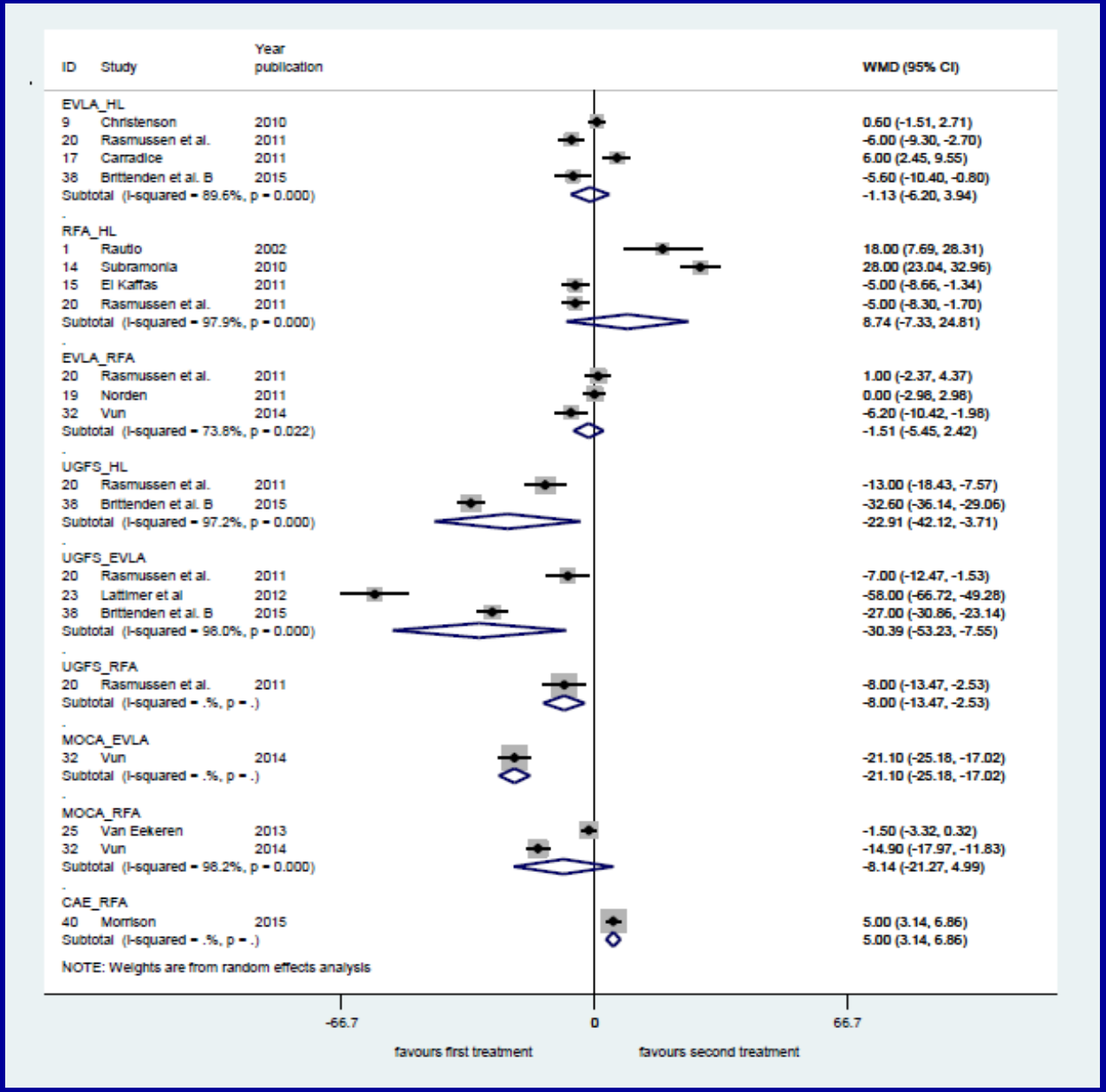
Procedure Times



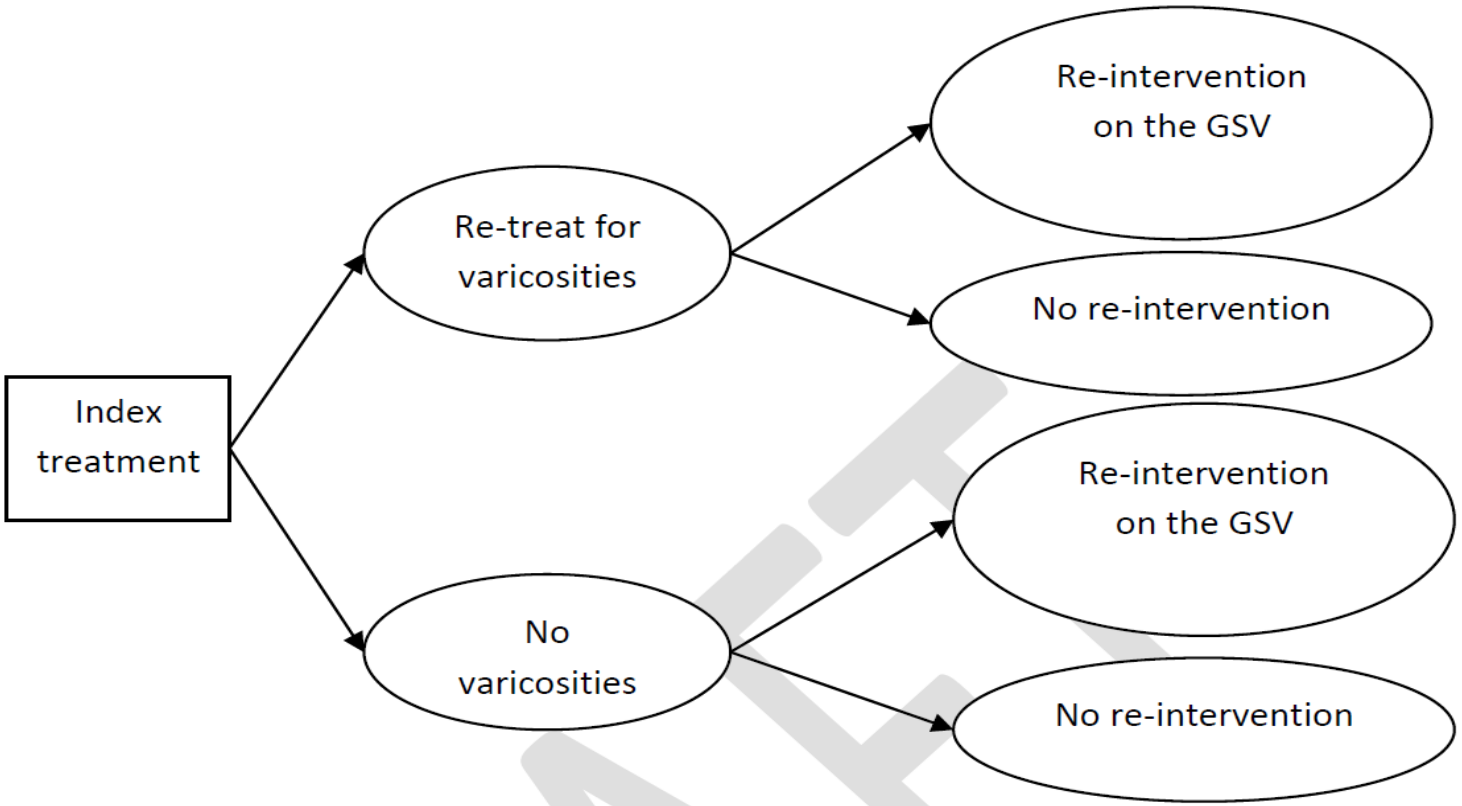
Procedure Cost

	Source	HL/S	EVLA	RFA	UGFS	MOCA	CAE
Cost theatre (£)		***529***	***338***	***333***	***143***	***270***	***362***
Theatre time (min)	a	*52*	58	57	27	46	62
Cost per min, theatre (£)	b	10.27	5.87	5.87	5.35	5.87	5.87
Kit and equipment (£)		***150***	***322***	***346***	***50***	***441***	***866***
Kit (£)	c		256	280		375	800
Consumables & anaesthetic (£)	b	150	66	66	50	66	66
Other Costs (£)		***257***	***72***	***72***	***42***	***72***	***72***
Preparation (£)	b	29	29	29	28	29	29
Recovery (£)	b	74	32	32	4	32	32
Equipment (£)	b	4	11	11	10	11	11
Total Cost (£)		**786**	**732**	**751**	**235**	**783**	**1300**

a. Network Meta-analysis; b. From Brittenden et al. (2015); c. Manufacturer's list price and Rautio et al. (2002)

Model used for comparrison

Figure 1.Structure of model. Residual varicosities are re-treated at 6 weeks and re-interventions can occur up to 5 years after index procedure



Probability of Re-intervention

Strategy	Probability of re-treatment for varicosity (6 weeks)	Probability of truncal vein re-intervention during 5 years	Discounted QALY (5 years)	Discounted Total Mean Cost (5 years)
CONS	0.36	0.72	4.47	197
UGFS	0.36	0.56	4.48	394
RFA	0.04	0.26	4.50	745
MOCA	0.04	0.26	4.50	822
EVLA	0.04	0.26	4.50	824
HL	0.04	0.27	4.50	828
CAE	0.04	0.26	4.50	1392

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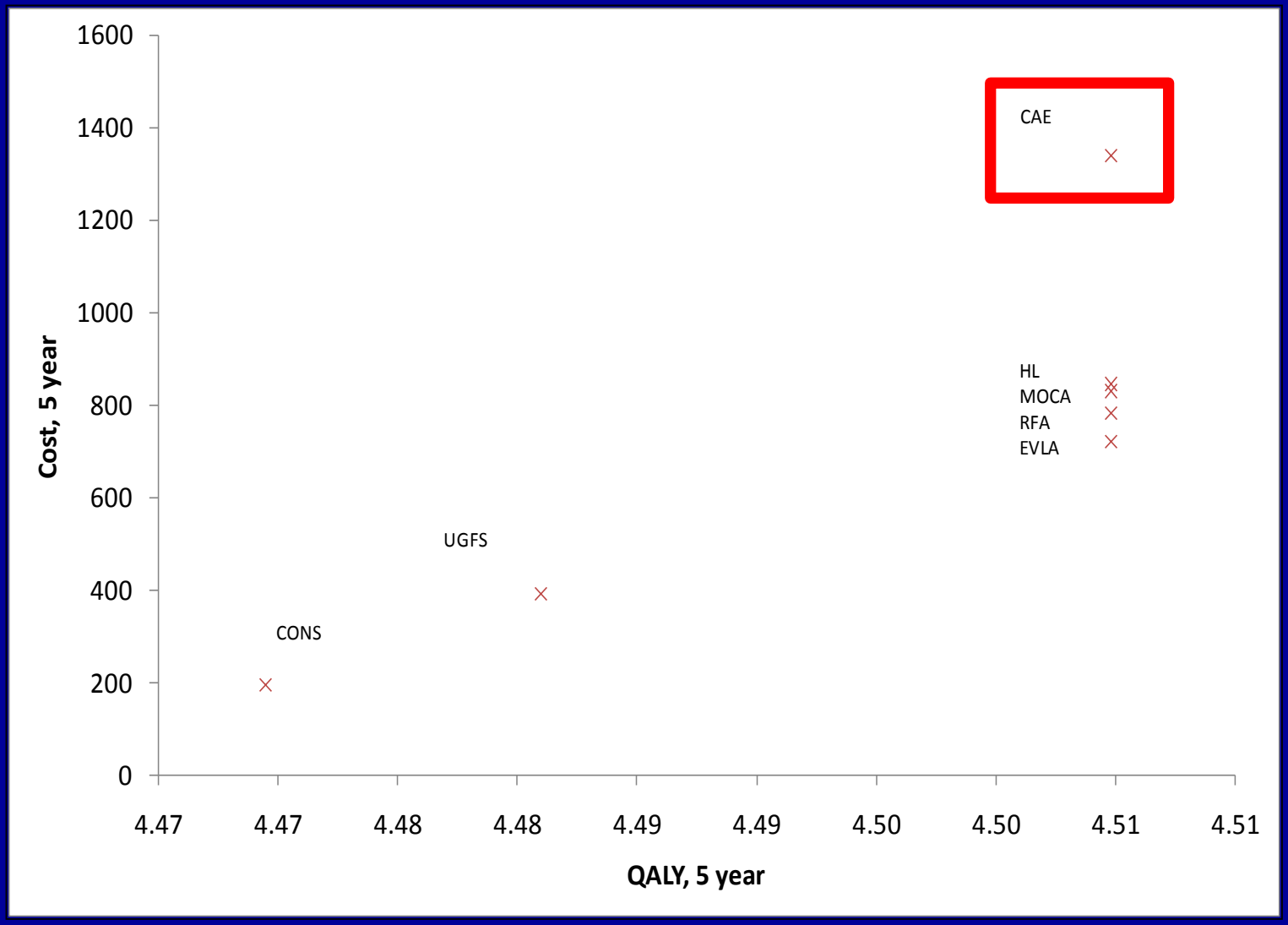
QALY at 5 year time horizon



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Conclusion

- Surgery, EVLA and RFA have lower re-intervention rates compared to UGFS and conservative care
- Re-intervention rate for MOCA appear similar to the endothermal methods and surgery
- No re-intervention data available for CAE
- Insufficient evidence for CAE at present to properly evaluate their cost-effectiveness

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Thank You!

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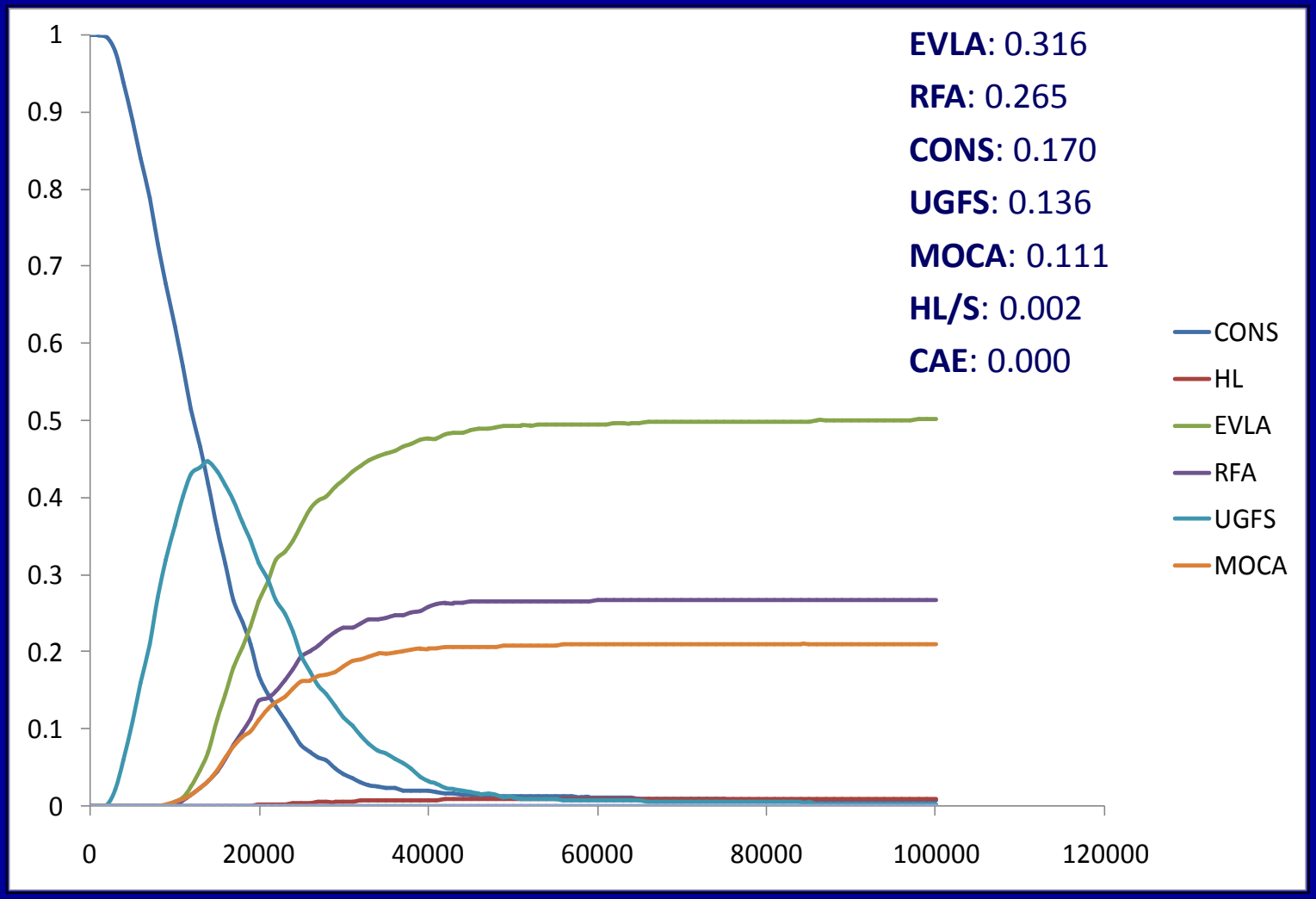
Cost-effectiveness



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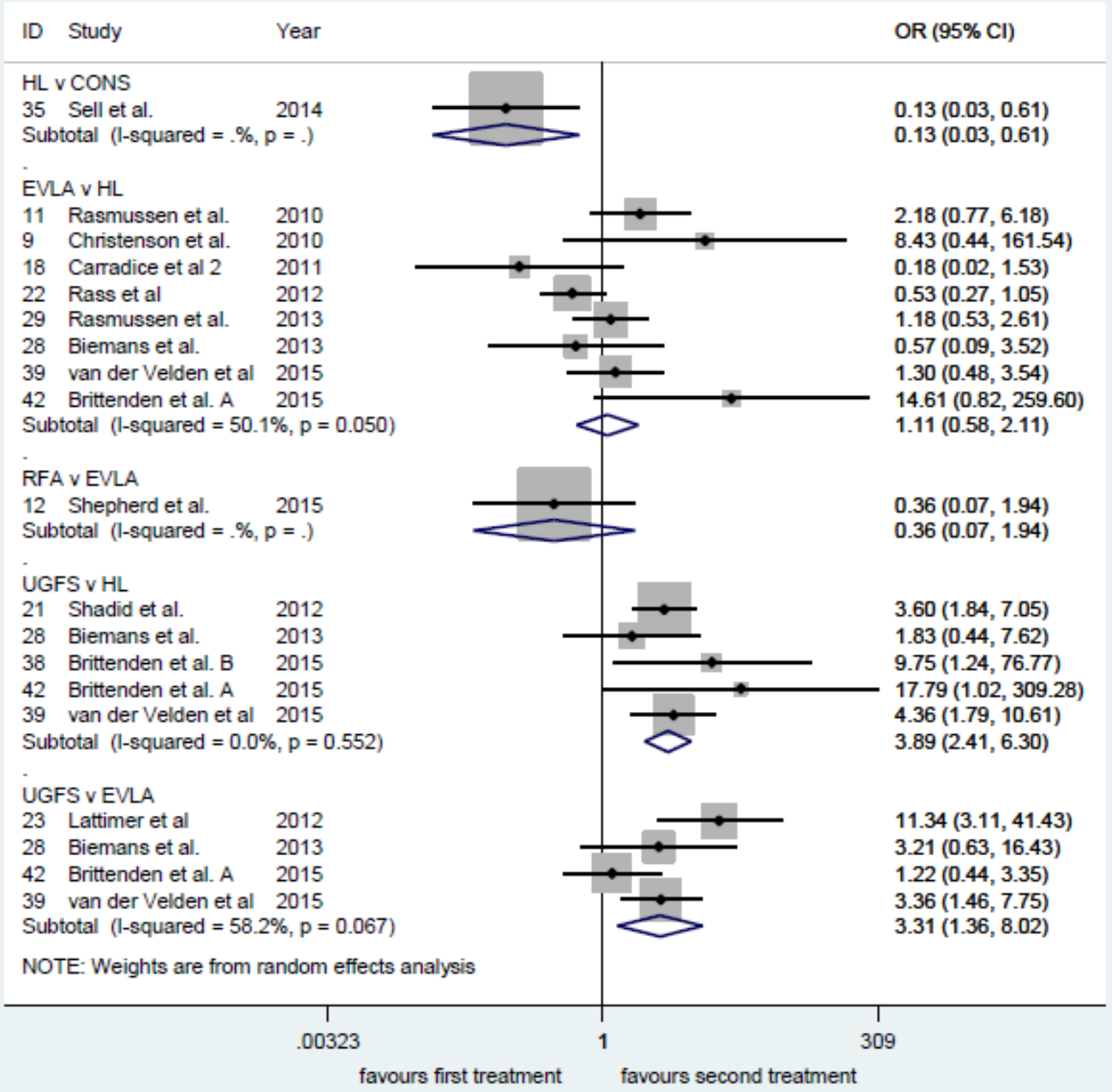
Re-intervention Comparison



Cost of index procedure

Table 1. Cost of index procedure

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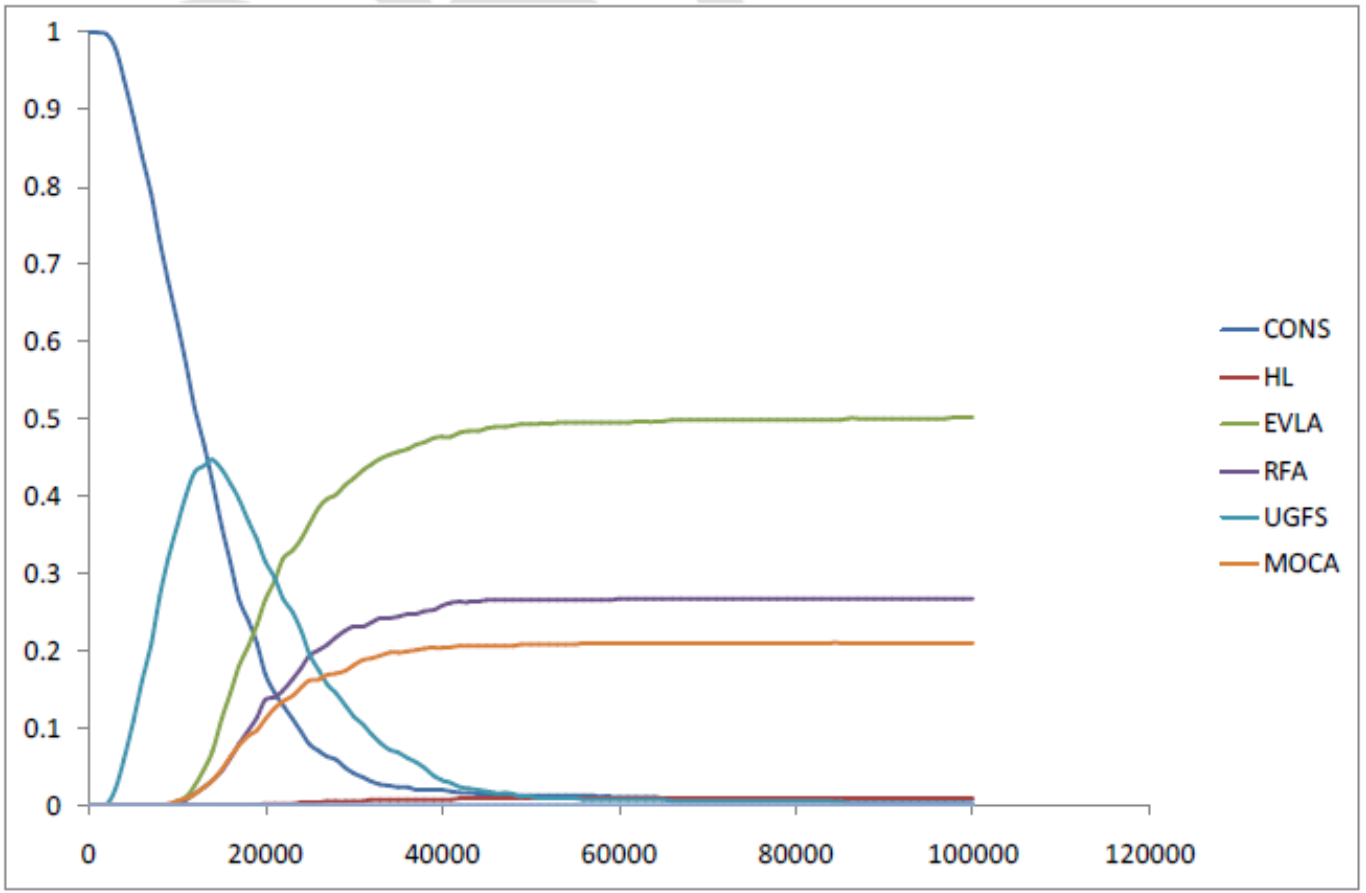
Total cost, £		*786*	*732*	*751*	*235*	*783*	*1300*

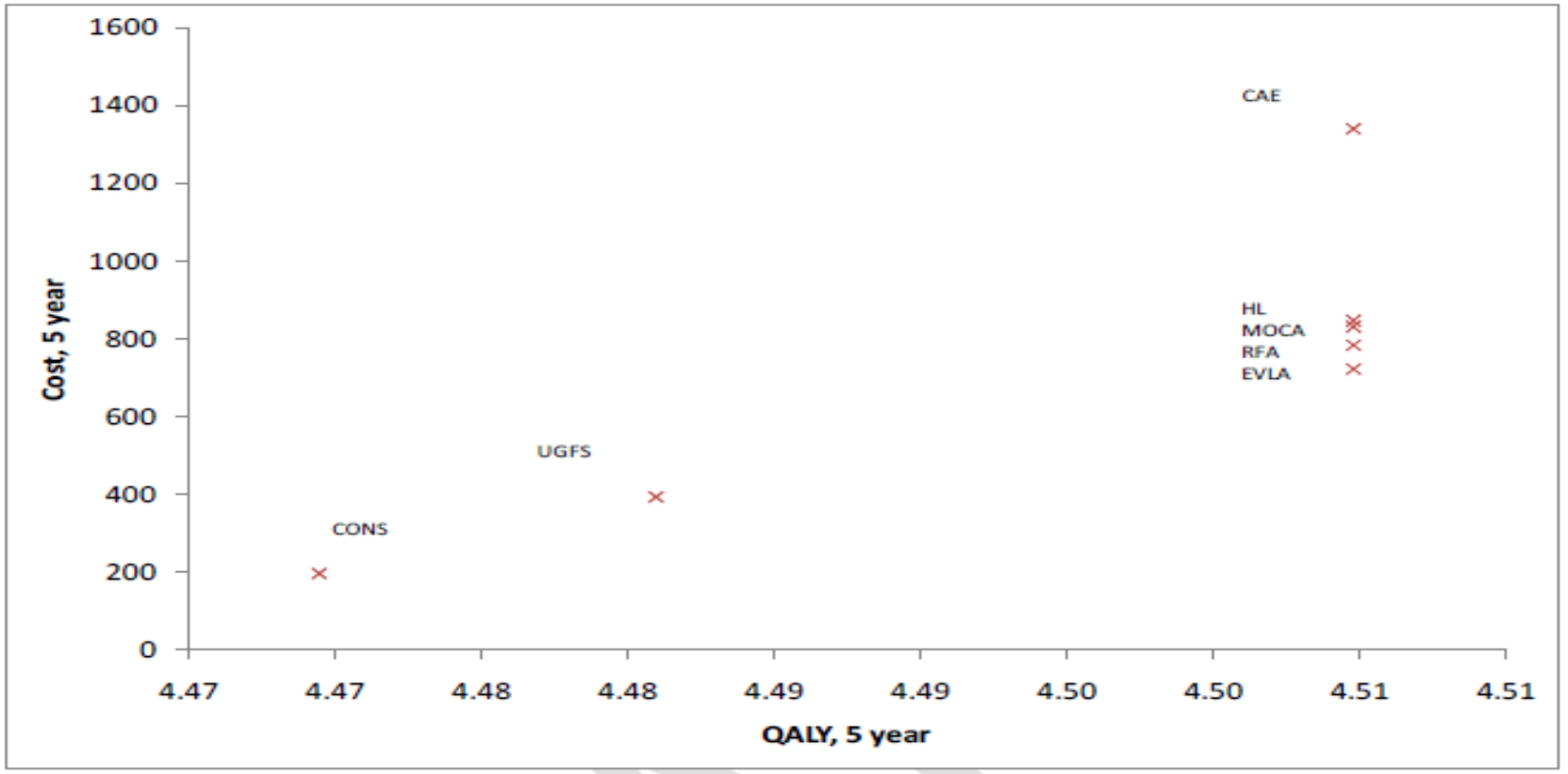
Cost effectiveness

Figure 4. Cost-effectiveness acceptability curves for each treatment option. The curve shows the probability that a given treatment obtains the highest net benefit at different thresholds for cost-effectiveness.



Mean cost and QALY 5 year horizon

Figure 3. Total mean cost and mean QALY per person over 5 years for each strategy.




"That's all Folks!"