Klinikum rechts der Isar
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The external validity of carotid RCTs – is the current evidence really transferrable to the „real world“?

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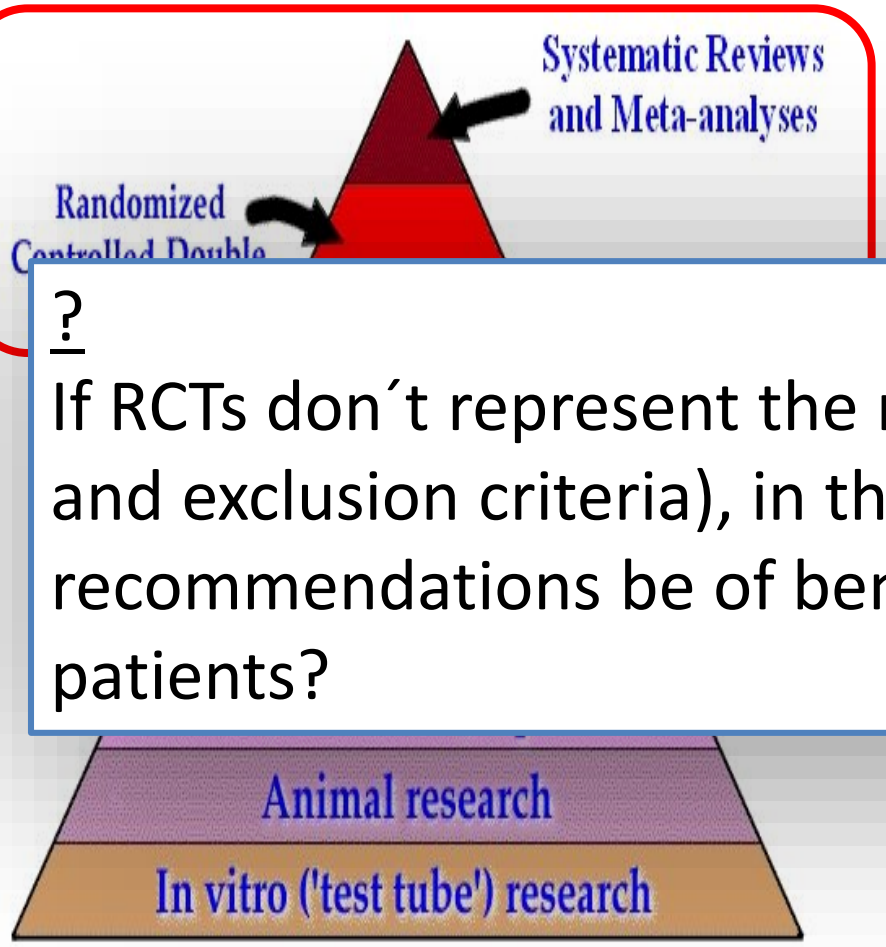
Disclosures

Trialcenter

- ROADSTER 2 - SILK ROAD MEDICAL ENROUTE®
- DWI-MRI-Study - SILK ROAD MEDICAL ENROUTE®
- ACST 2

Hierarchy-pyramid of medical evidence



Guideline recommendations

Class I	Evidence and/or general agreement
	established by evidence/opinion
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful

?

If RCTs don´t represent the majoriti of our patients (due to inclusion- and exclusion criteria), in the worst case could the guideline recommendations be of benefit for a few and of harm to many of our patients?

Internal- / external-Validity

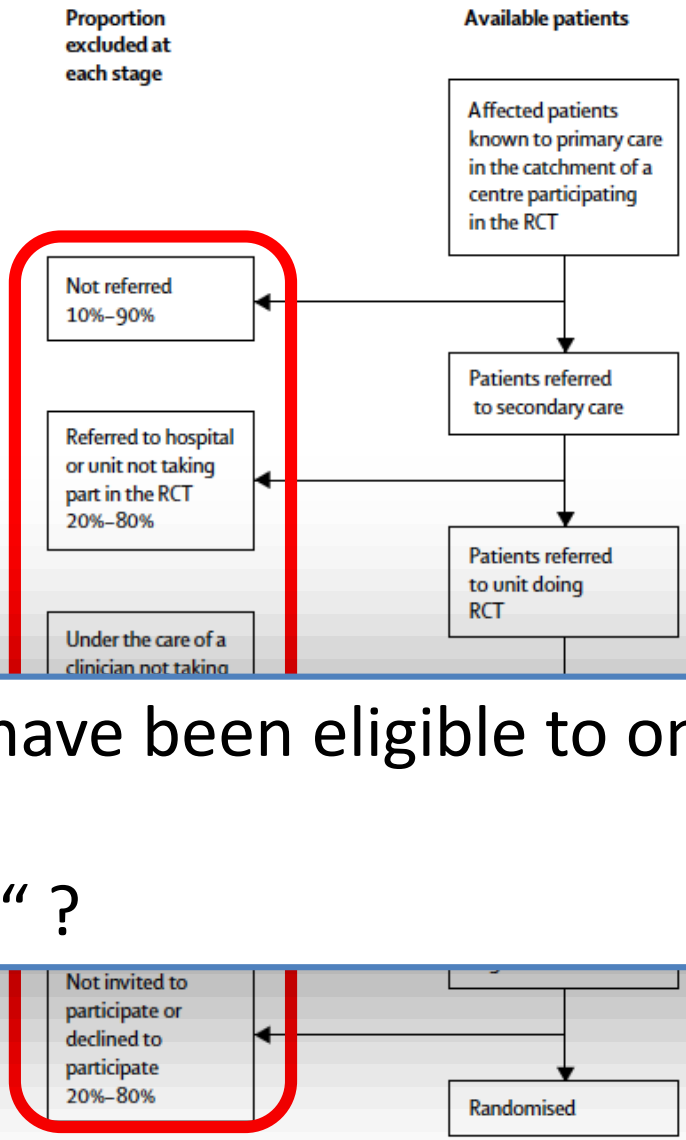
RCTs and systematic reviews are the most reliable methods of determining the effect of a treatment

- **Internal validity** assesses RCTs (blinding, prevention of „biases“, etc.)

- **External validity** applicability to „real world“
  - Number of inclusion and exclusion criteria limits external validity
  - Number of randomised to eligible but not randomi
  - Number
  - Socio-ec
  - …

External validity of randomised controlled trials: “To whom do the results of this trial apply?”

Lancet 2005; 365: 82–93 Peter M Rothwell



Worst case	Best case
10%	90%
2%	72%
0,001%	42%

- How many of our patients would have been eligible to one of the major RCTs?
- Do RCTs represent the „real world“ ?

Methods

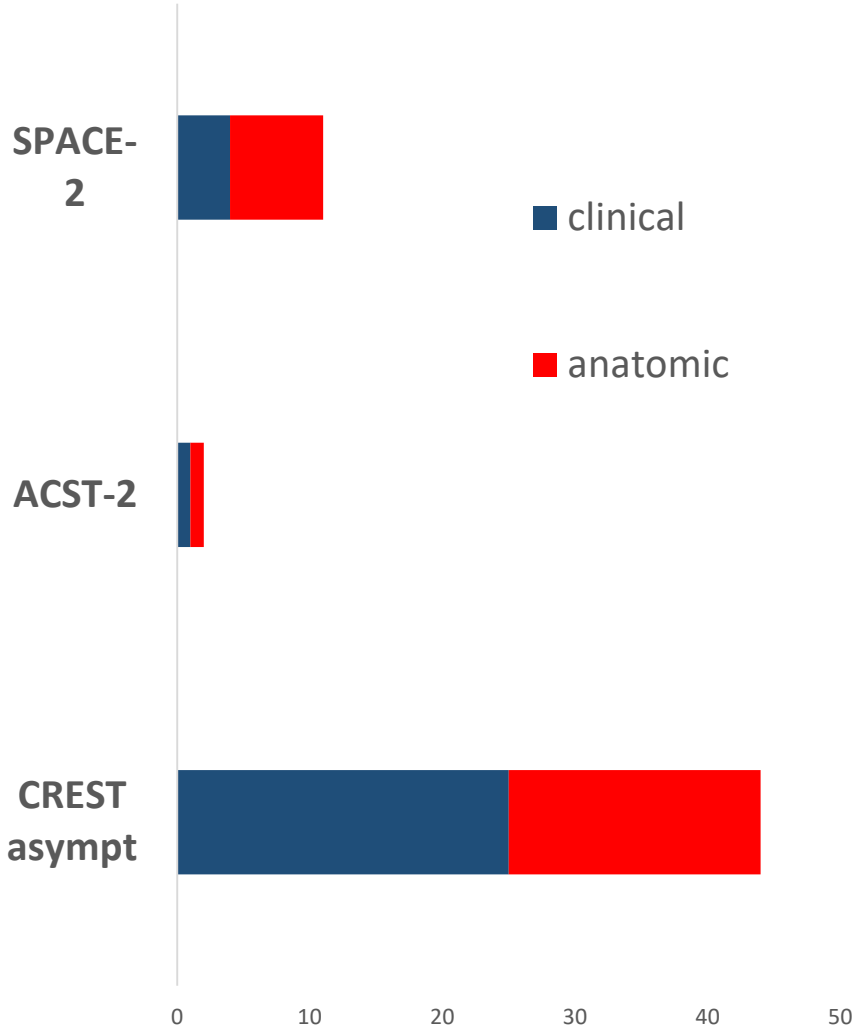
- Assessment of inclusion and exclusio criteria of
  - asymptomatic RCTs (SPACE-2, ACST-2, CREST^{asympt})
  - symptomatic RCTs (SPACE-1; CREST^{sympt}; EVA-3S; ICSS)

- Retrospective analysis of 200 asymptomatic and 200 symptomatic consecutive patients that we treated for carotid artery stenosis
  - Clinical data (electronic data sets)
  - Anatomic data (CT-A / MR-A)

Baseline characteristics asymptomatic patients

		All (n=200)	Men (n=155)	Women (n=45)
		(%)	(%)	(%)
Men		-	77.5	22.5
age	mean	72.8	72.8	72.9
	sd	7.36	7.55	6.75
side	right	54.5	53.5	57.8
Restenosis		6	5.2	8.9
Contra lateral occlusion		9	9	8.9
CVRF	Hypertension	87.5	86.5	91.1
	Diabetes melitus	33	36.8	20
	Nicotin abuse former	42.5	43.2	40
	Nicotin abuse ongoing	17.5	18.1	15.6
	Hypercholesterol	78.5	79.4	75.6
High risk for CEA		59	59.4	57.8
ASA	1 - 2	41	39.3	46.7
	3 - 4	59	60.7	53.4
Clinical stadium	Ia	71.5	72.3	68.9
	Ib	28.5	27.7	31.1
Intervention	CEA	82.5	82.6	82.2
	TCAR	16	16.1	15.6
	tfCAS	1.5	1.3	2.2

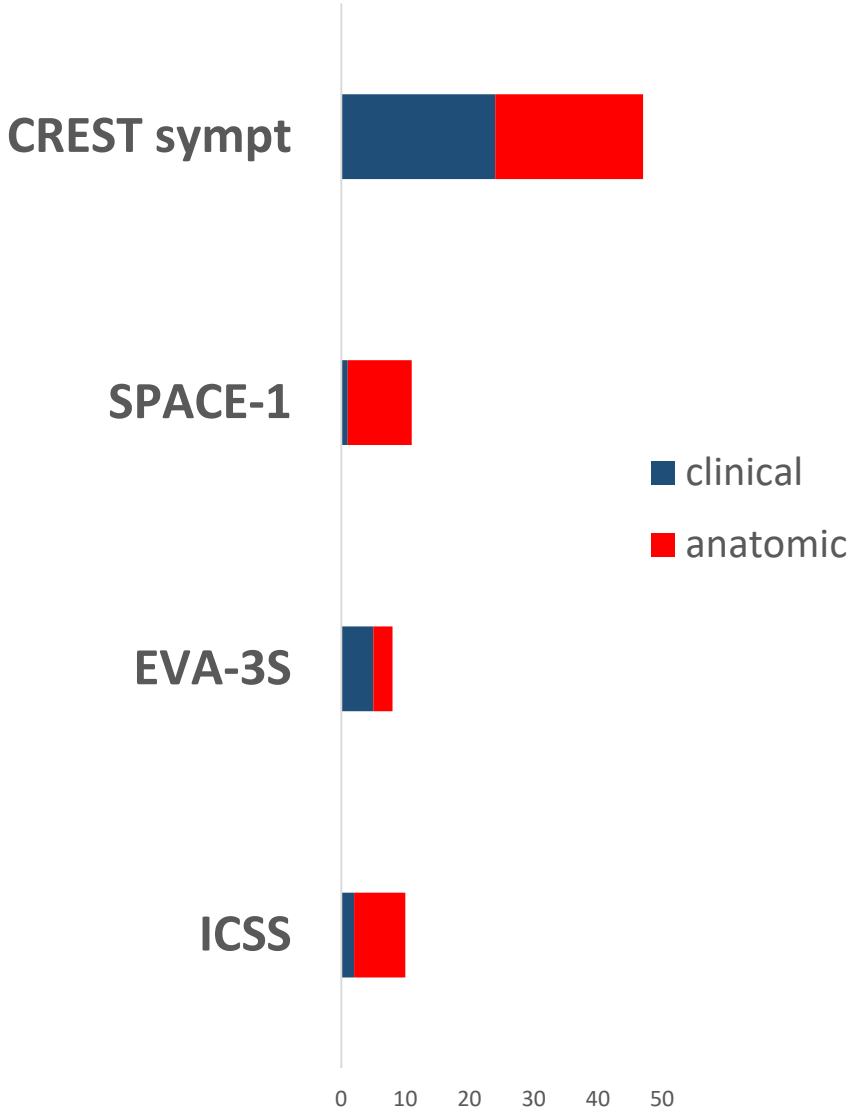
Number of in- and exclusion criteria and eligibility to asymptomatic RCTs

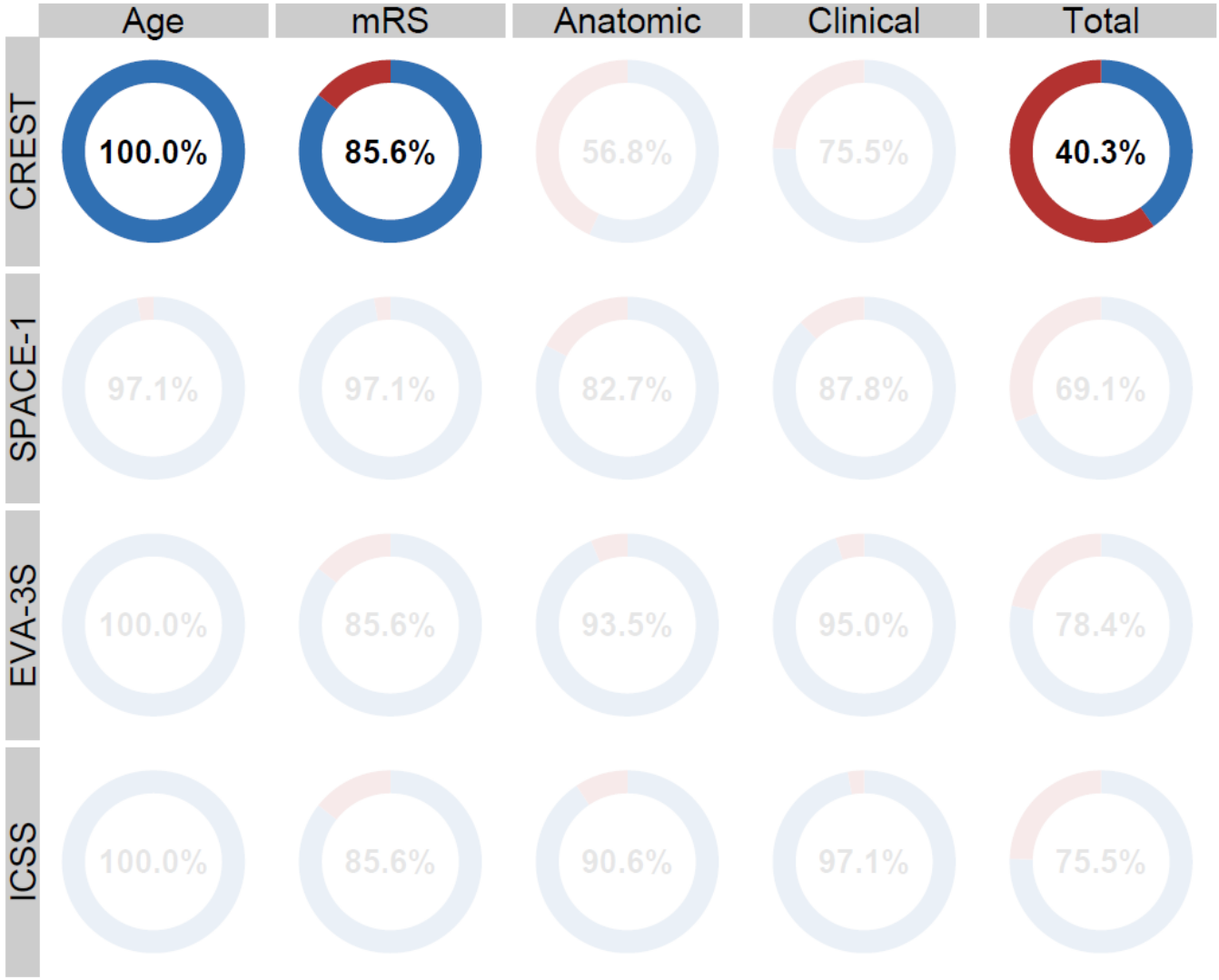


Baseline characteristics symptomatic patients

		All (n=200)	Men (n=140)	Women (n=60)
		%	%	%
sex		-	70	30
age	mean	72.5	72.3	73
	sd	9.59	9.51	9.83
side	right	57	57.9	55
Restenosis		2	2.9	0.0
Contra lateral occlusion		5	6.4	1.7
CVRF	Hypertension	86	85	88.3
	Diabetes melitus	27	27.9	25
	Nicotin abuse former	33.5	39.3	20
	Nicotin abuse ongoing	17.5	15.7	21.7
	Hypercholesterol	55.5	58.6	48.3
High risk for CEA		62.5	65.7	55
ASA	0 - 2	38	37.1	40
	3 - 4	62	62.9	60
mRS	0	56	56.4	55
	1-2	29.5	24.2	28.4
	3 - 5	14.5	10.1	16.6
Intervention	CEA	98.5	98.6	98.3
	TCAR	1.5	1.4	1.7

Number of in- and exclusion criteria and eligibility to symptomatic RCTs





Limitations / Conclusion

- Retrospective data
- We don´t know who would have taken part in a trial

- Some RCTs represent a selected patient group (CREST critical!)
- External validity of some RCTs might be limited

Thank you very much!

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