Assessing the impact of searching fewer databases in rapid reviews

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Trusted evidence.

Informed decisions.

Better health.

Potential conflicts of interest

- This research was funded by Cochrane Austria.
- No other potential or actual conflicts of interest in relation to this presentation.

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Decision making needs reliable evidence syntheses

Systematic Reviews

- Most **reliable & valid** support for decision-making
- Synthesis of all evidence about a research question
- Systematic methods minimize bias
- Takes 6-12 months to complete

Rapid Reviews

- Based on systematic review methods: processes are accelerated and methods are streamlined
- Takes 5–12 weeks to complete
- **Reliability of conclusions?**

Research question

Do bodies of evidence that are based on abbreviated literature searches lead to **different conclusions** compared with those based on comprehensive, systematic literature searches?

METHODS

Sample selection

60 randomly selected Cochrane reviews

Main inclusion criteria

- Authors were able to draw a conclusion
- Summary of findings tables
- Reproducible Meta-analyses
- Used MEDLINE, EMBASE, and Central

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14 search abbreviated search approaches

compared to original comprehensive search

MEDLINE	EMBASE	Central	MEDLINE + EMBASE	MEDLINE + Central	Central + EMBASE	MEDLINE + Central + EMBASE

+

Search of reference lists of relevant publications

Database coverage

$$\frac{\text{\# of included references indexed in a database}}{\text{\# of included references cited in the review}} \times 100$$

Recall

$$\frac{\text{\# of included references retrieved by a search approach}}{\text{\# of included references cited in the review}} \times 100$$

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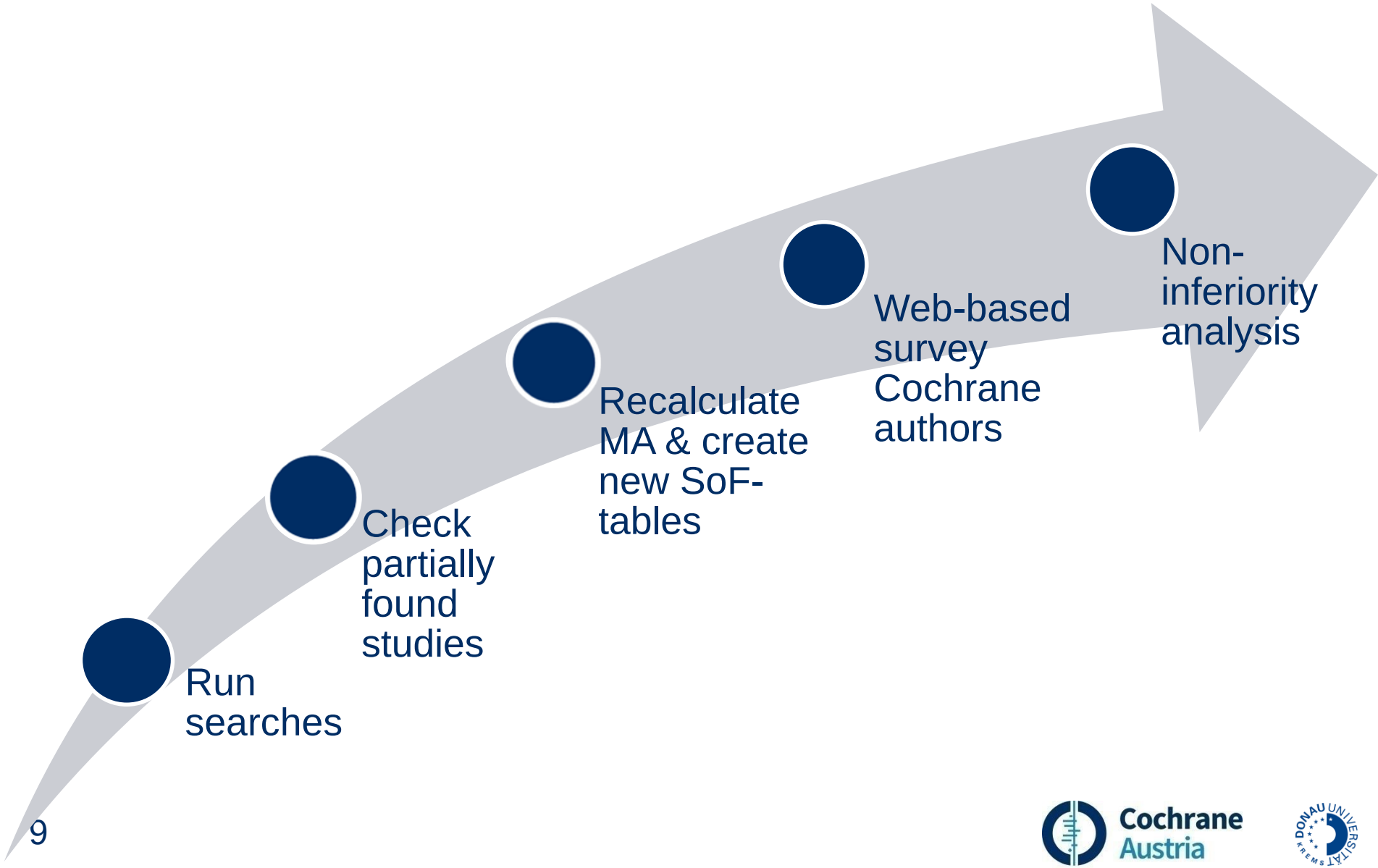
Research Process



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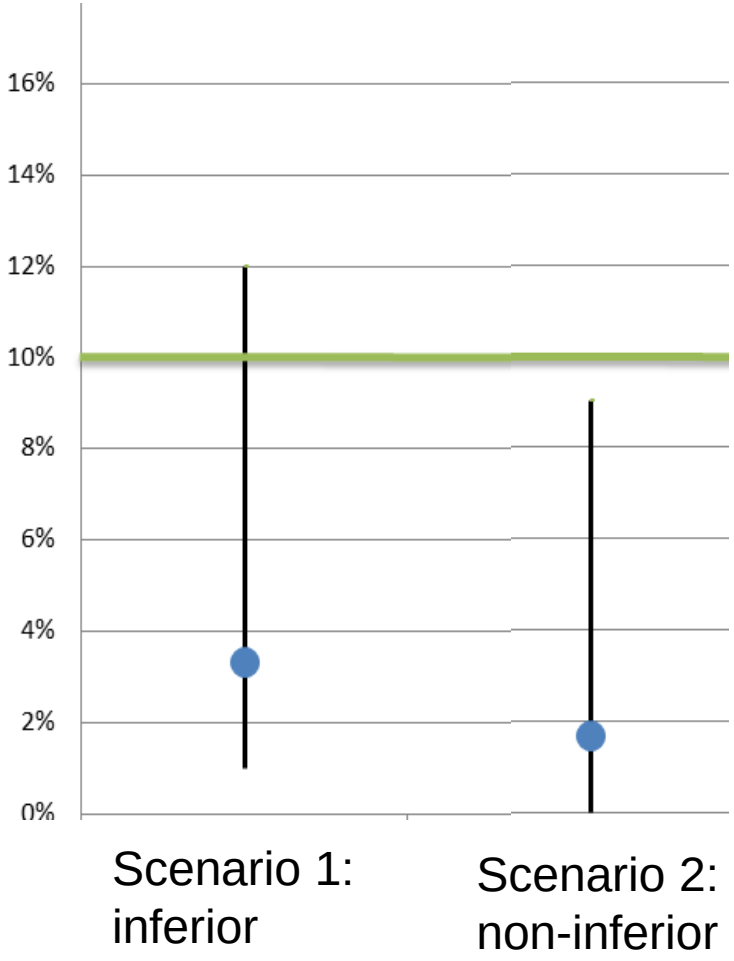
Non-inferiority analysis

Non-inferiority margin
(Wagner et al. 2017)



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RESULTS

Review characteristics

Type of intervention	
• Pharmacological (drugs, vaccines)	30 (50%)
• Non-pharmacological (psychological, educational, dietary, physical exercise, complex interventions, screening, surgery, management strategies)	30 (50%)
Study design of included studies	
• RCT only or RCT+quasi-RCT	53 (88%)
• RCT+controlled clinical trial, before-after study or interrupted time series	7 (12%)
Information sources	
• Medline, Embase, Central	60 (100%)
• At least 2 other types of information sources	60 (100%)
– Other bibliographic databases	56 (93%)
– Grey literature and unpublished data	59 (98%)
– Other sources (reference lists, citation tracking, handsearch)	56 (93%)

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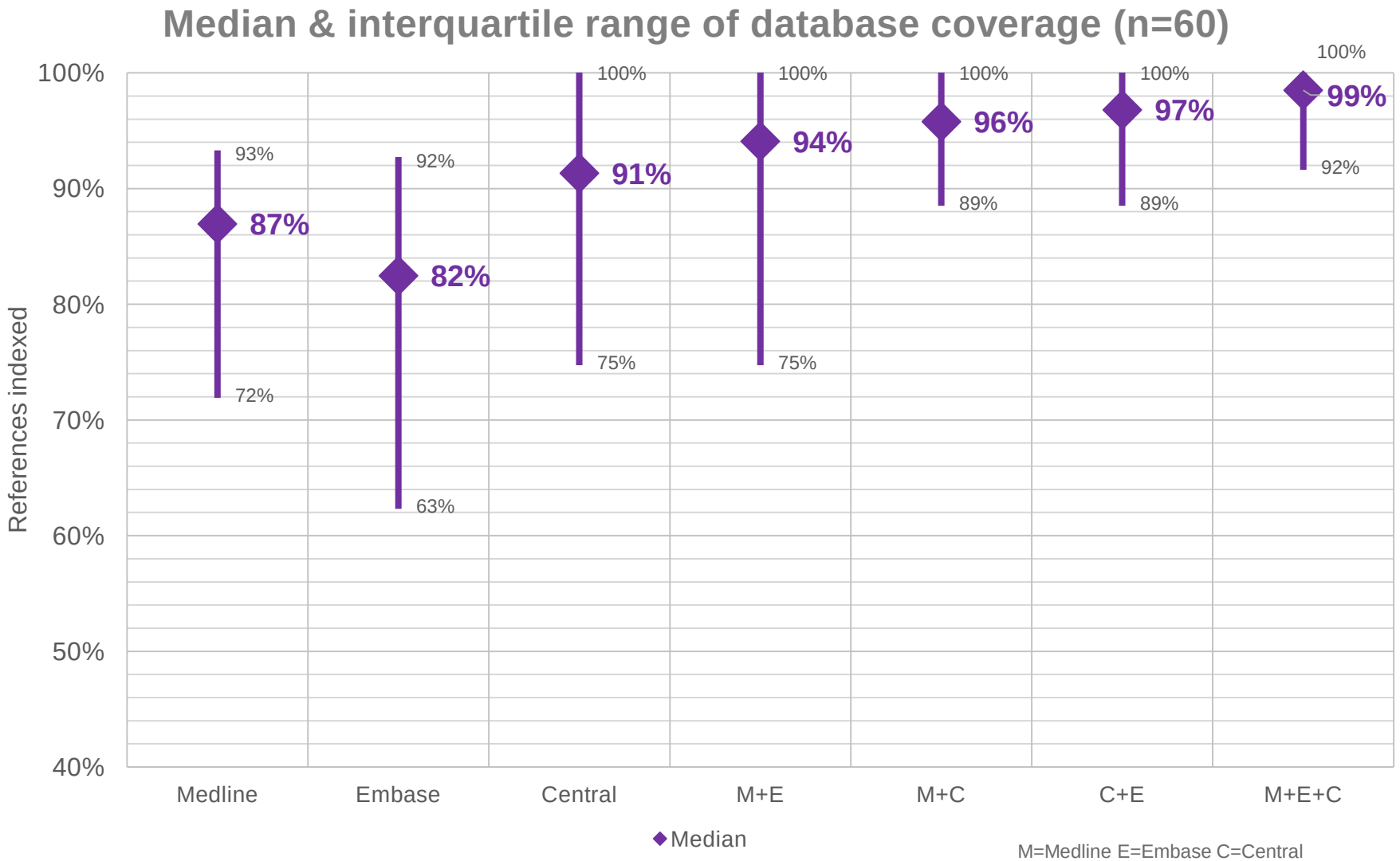
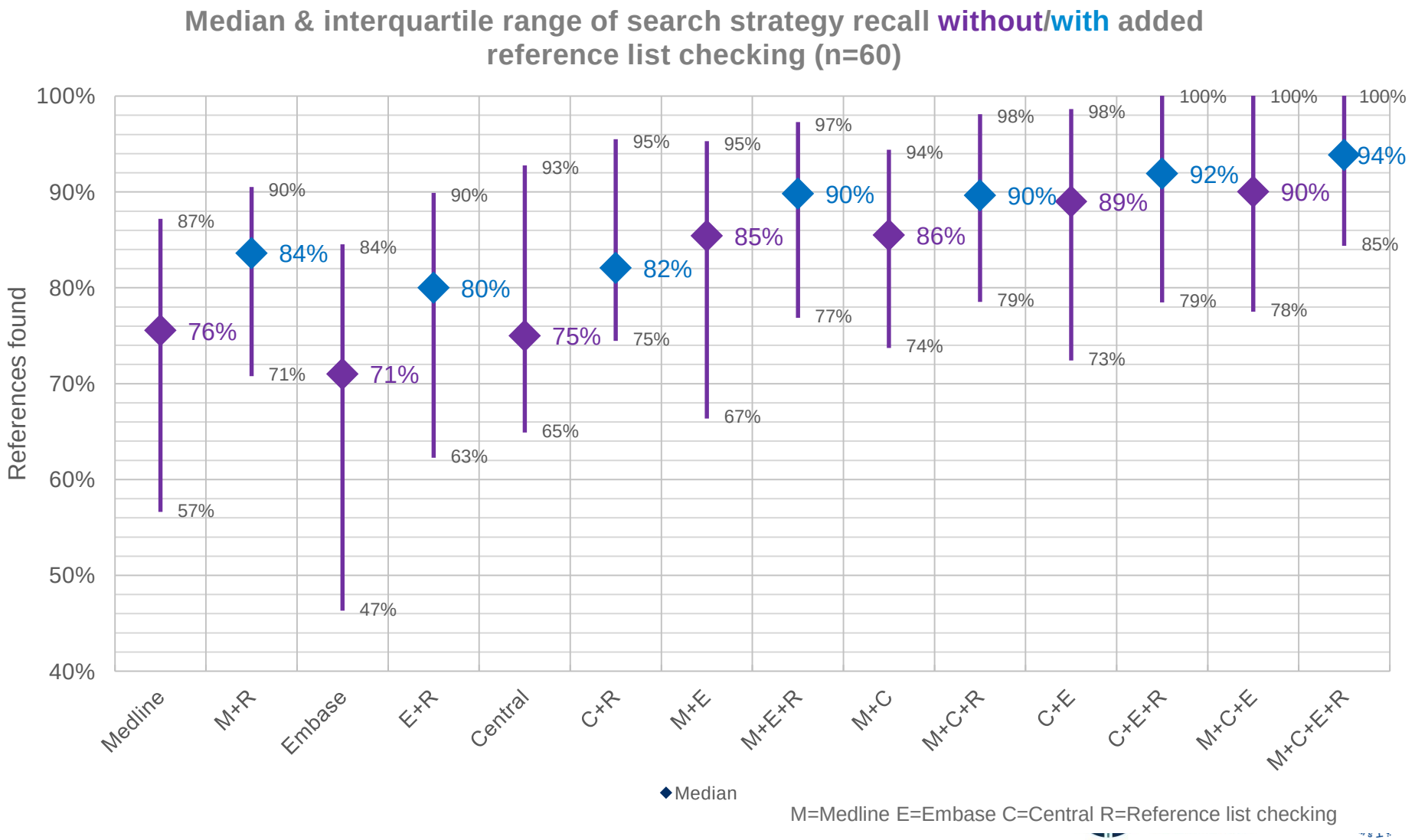
Database coverage

Were the included references indexed in any of the databases?



Recall

Were the included references found by the search strategies?



Impact on overall conclusion if

Discordant conclusion = any change in conclusion

- less certainty, but the same direction of conclusion
- opposite conclusion (= changed direction of conclusion)
- no conclusion possible

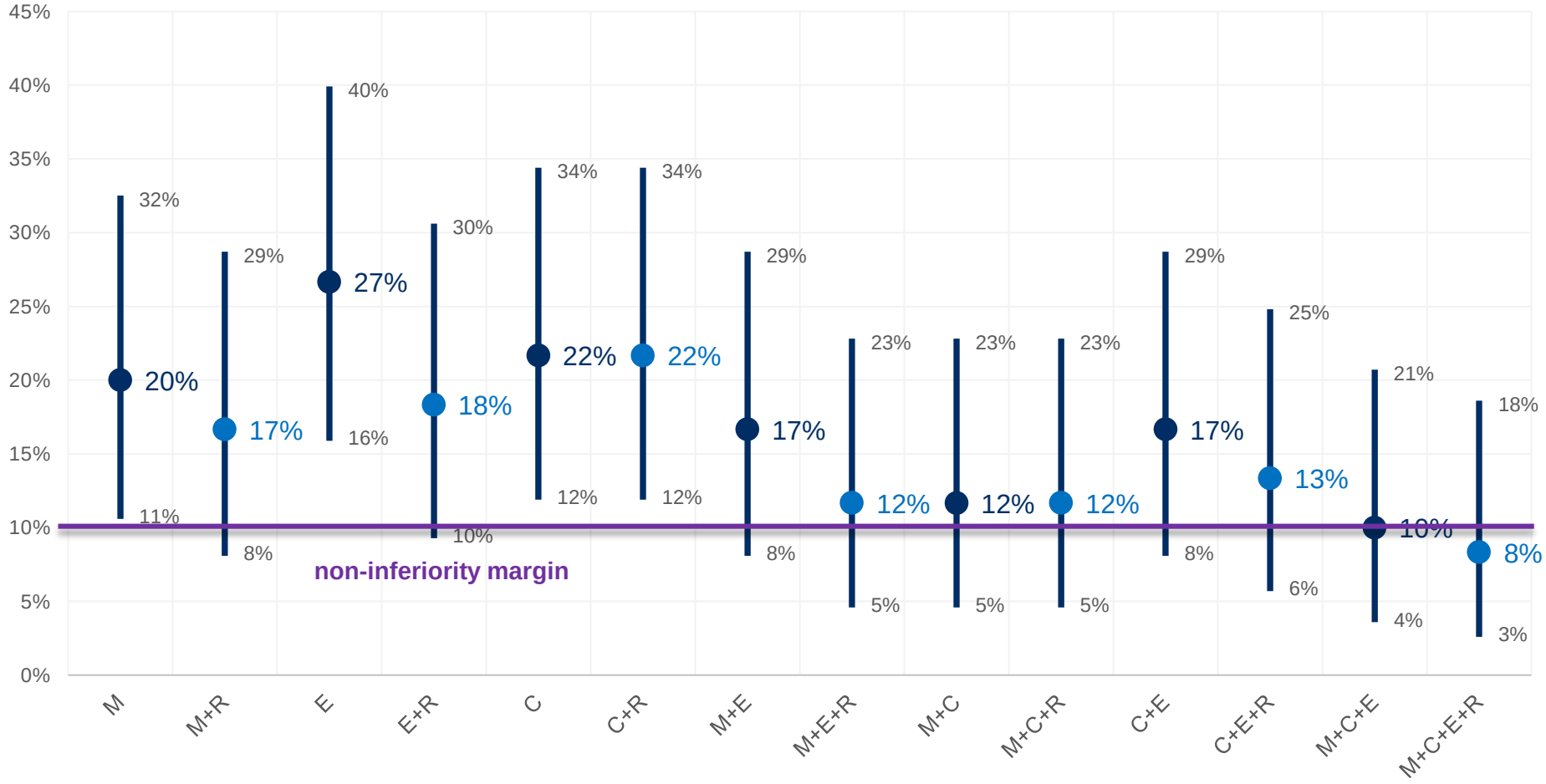
Conclusions of abbreviated searches

	M	M+R	E	E+R	C	C+R	M+E	M+E+R	M+C	M+C+R	C+E	C+E+R	M+C+E	M+C+E+R
conclusion does not change	48	50	44	49	47	47	50	53	53	53	50	54	52	55
Same conclusion with less certainty	6	4	6	5	8	8	5	2	3	3	6	2	4	1
Opposite conclusion	2	2	3	1	1	1	1	1	1	1	1	1	1	1
conclusion is no longer possible	4	4	7	5	4	4	4	4	3	3	3	3	3	3

M=Medline E=Embase C=Central R=Reference list checking

Any change in conclusion

Proportion of conclusions with any changes and 95% confidence interval for each search approach (without/with added reference list checking) (n=60)



● Proportion of discordant conclusion

M=Medline E=Embase C=Central R=Reference list checking

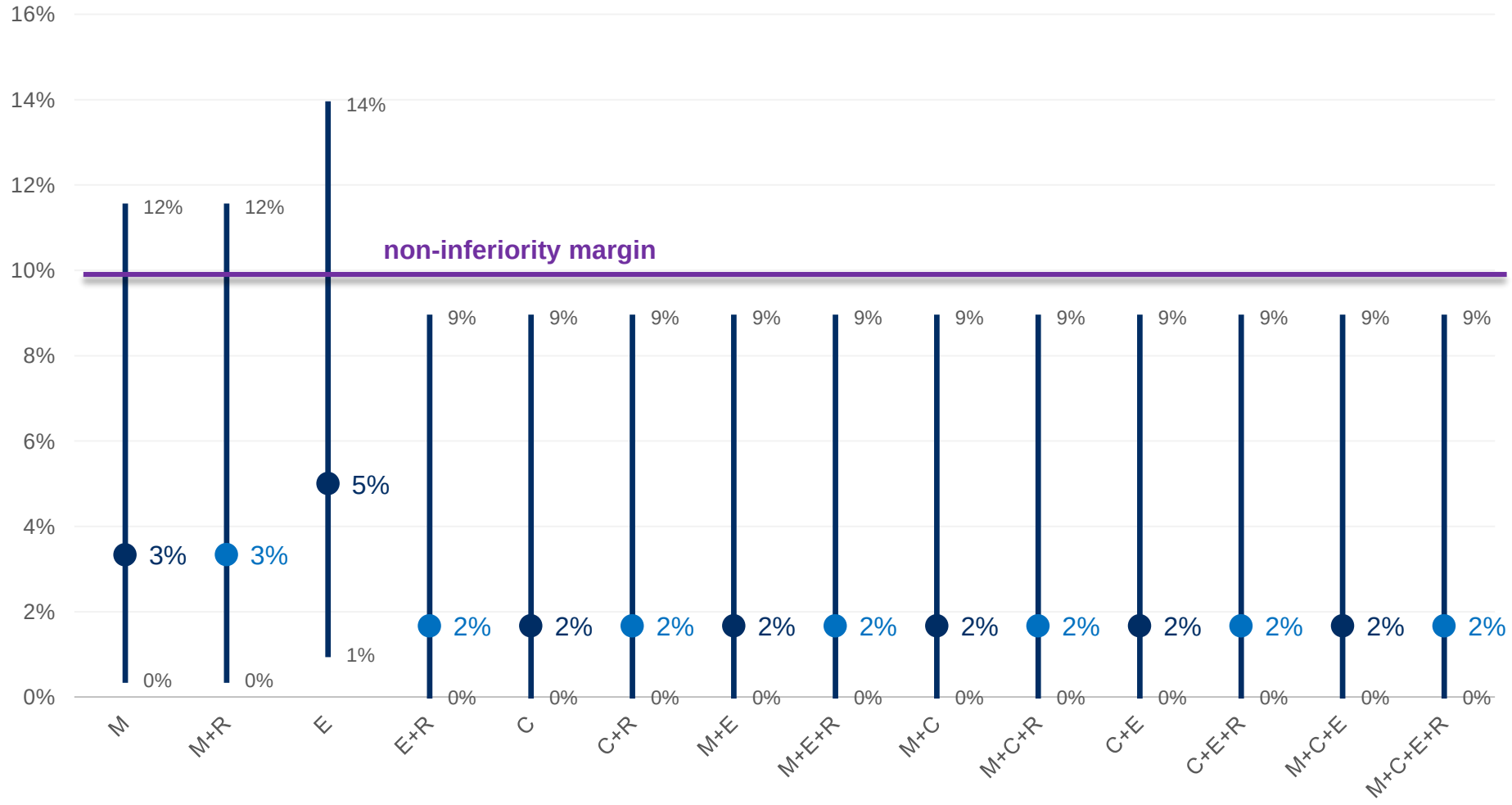
Impact on overall conclusion if

Disconcordant conclusion

= Opposite conclusion only

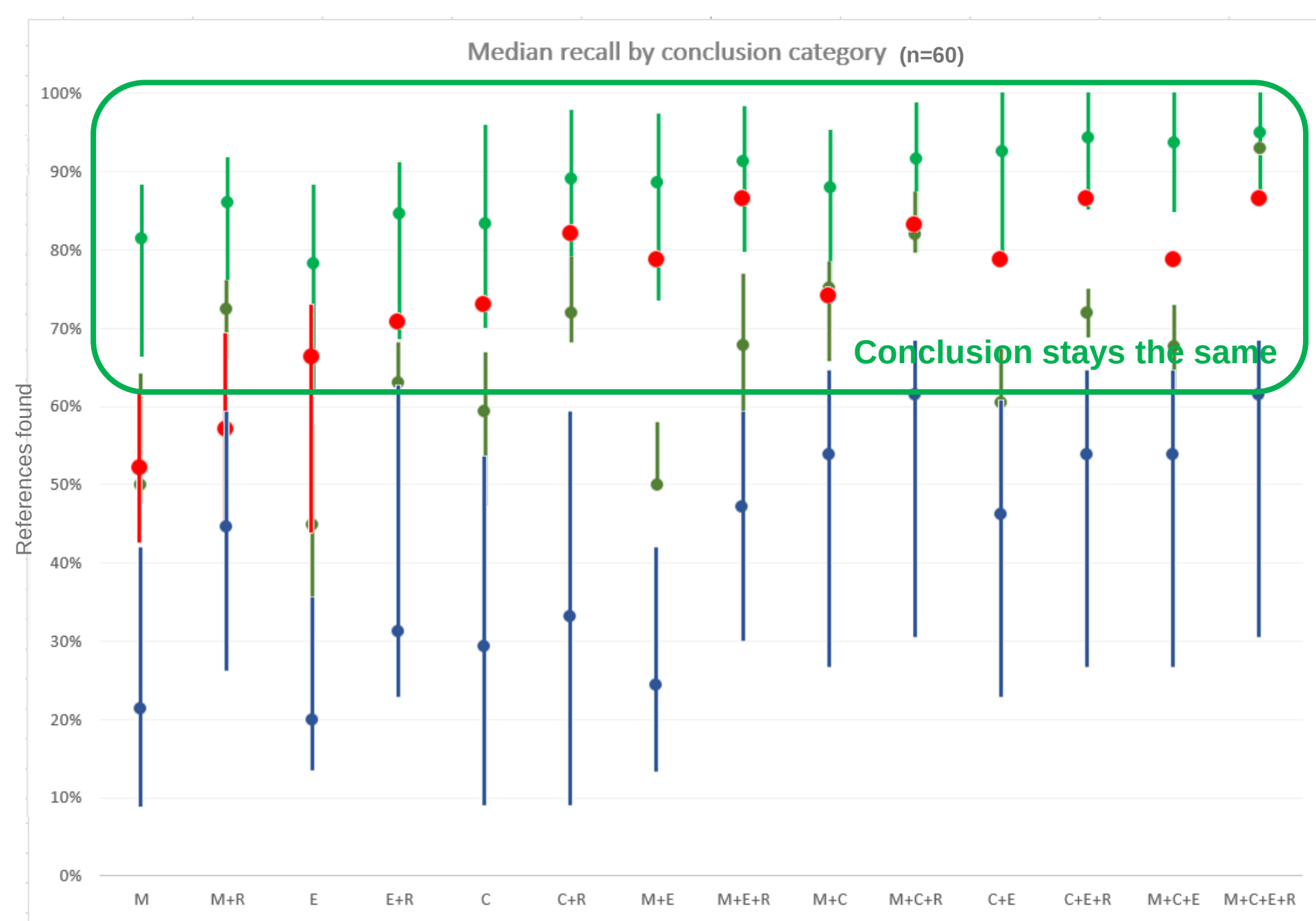
Opposite conclusions only

Proportion of opposite conclusions and 95% confidence interval for each search approach (without/with reference list checking) (n=60)



Proportion of discordant conclusion

M=Medline E=Embase C=Central R=Reference list checking



- Conclusion unchanged
- Same conclusion, less certain
- Opposite conclusion
- No conclusion possible

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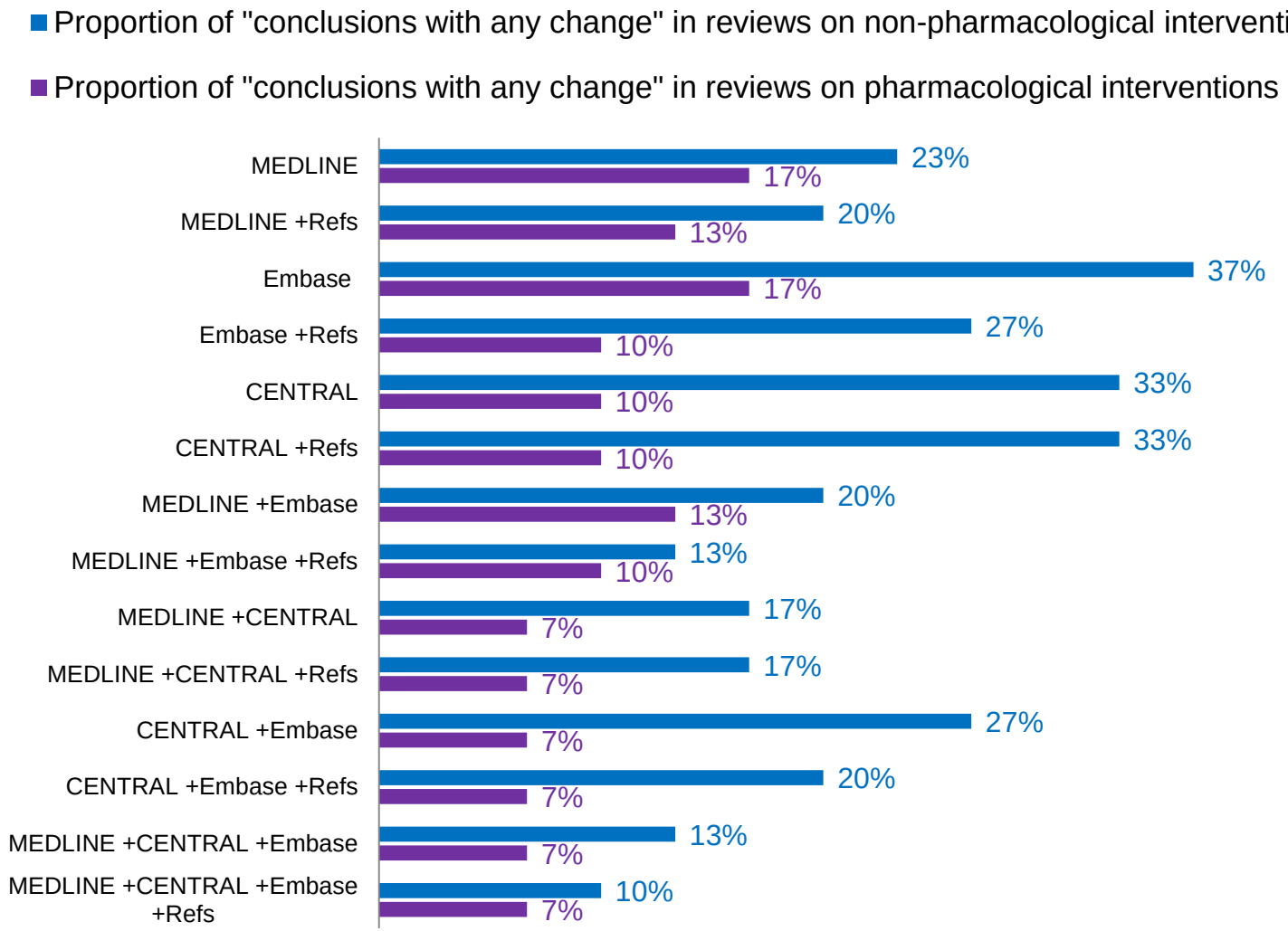
Pharmacological vs non-pharma. reviews



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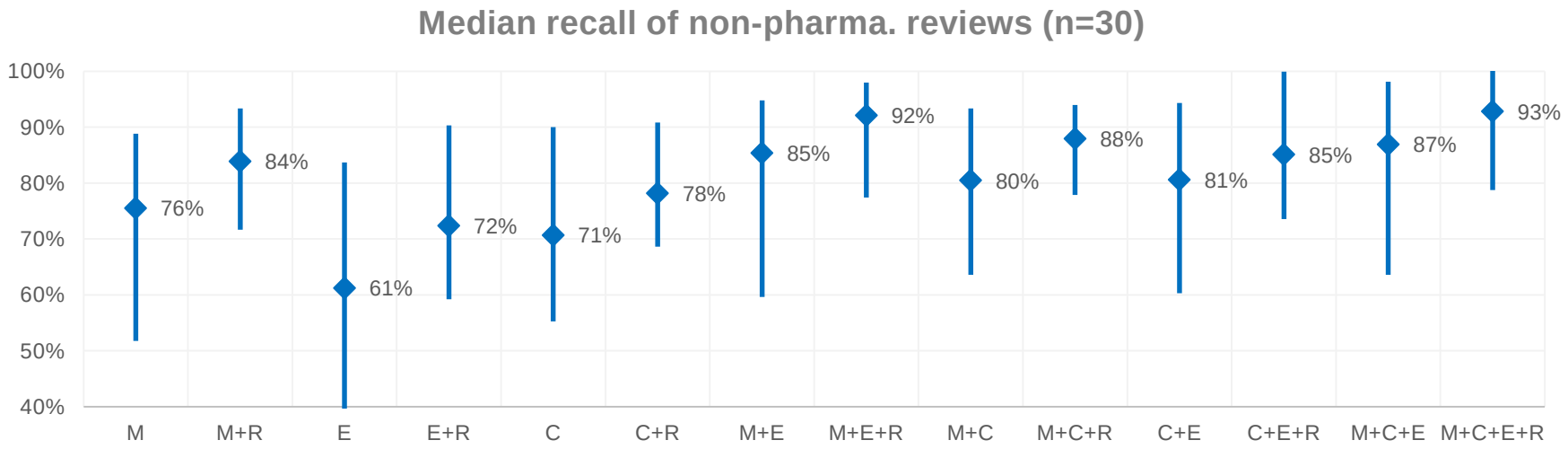
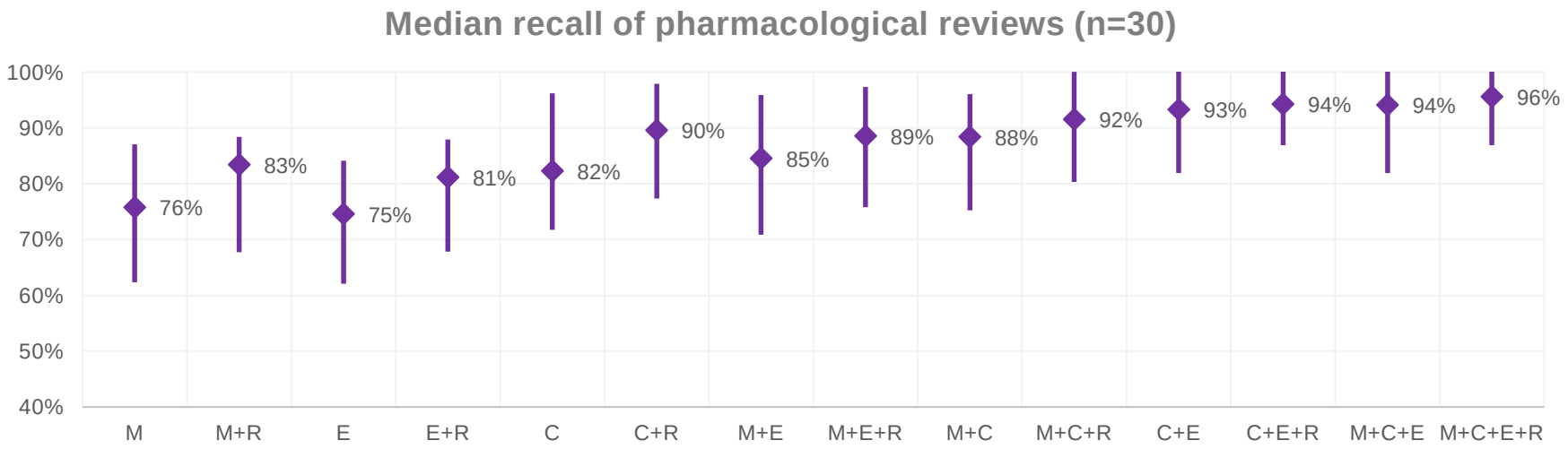
Recall pharma. vs non-pharma reviews





M=Medline E=Embase C=Central R=Reference list checking

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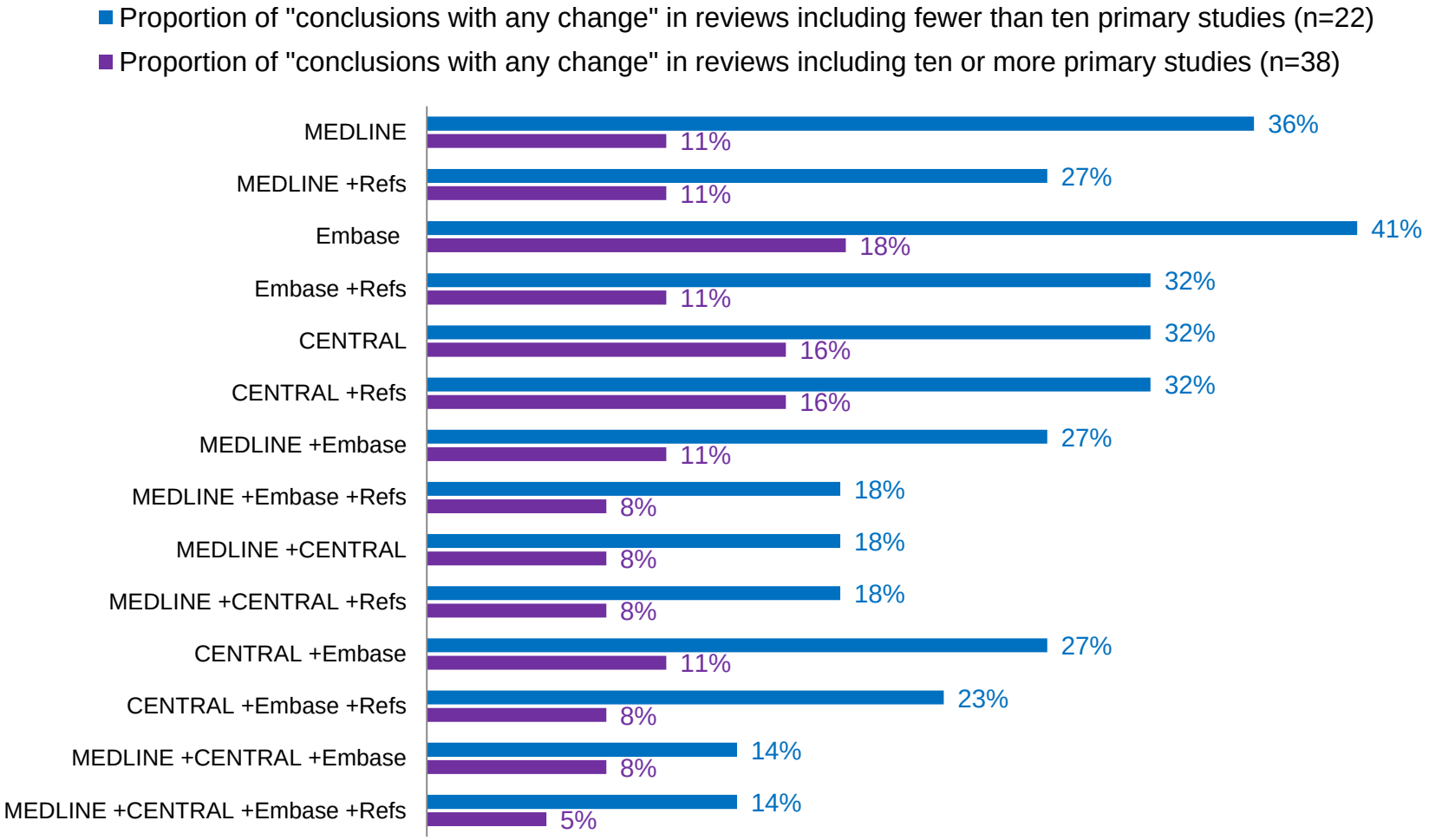
Conclusions depending on number of included studies



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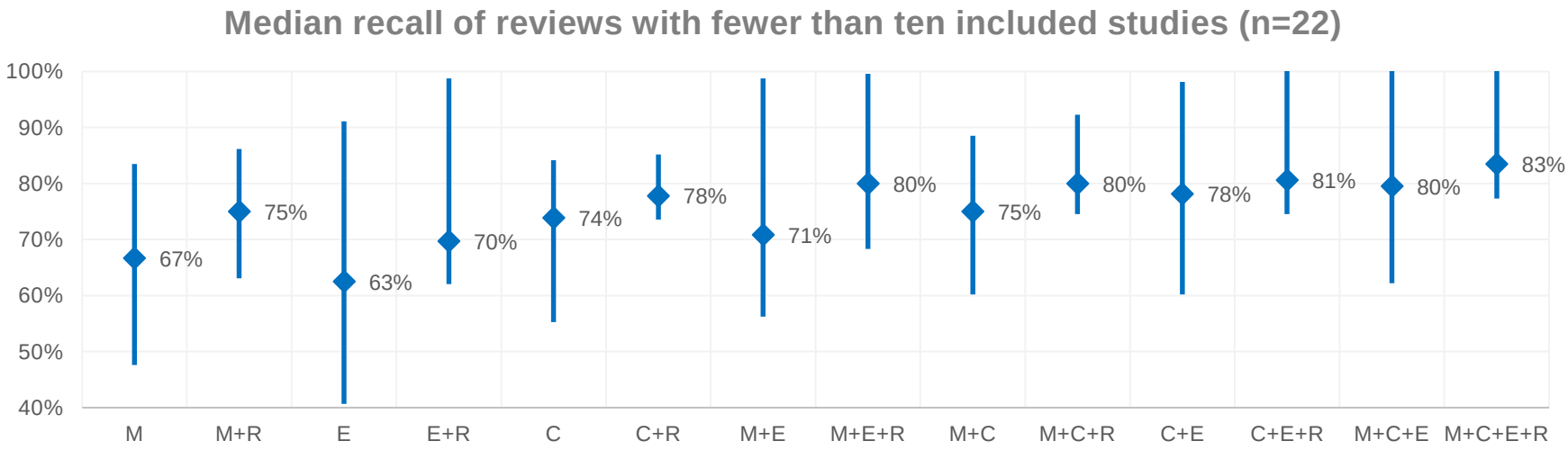
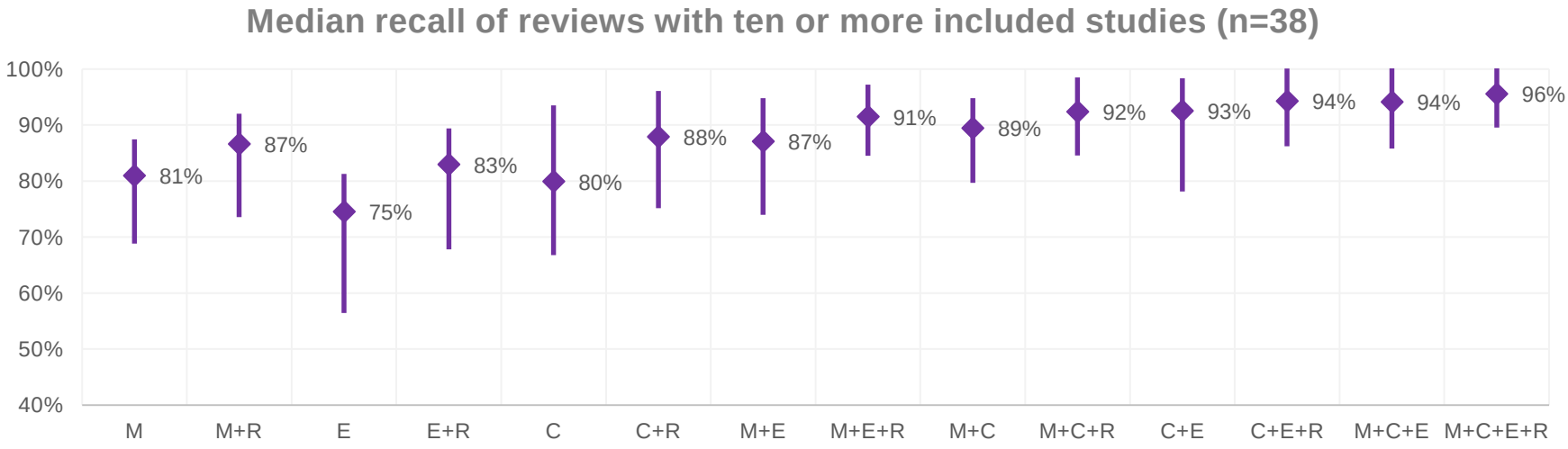
Recall: number of included studies





M=Medline E=Embase C=Central R=Reference list checking

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DISCUSSION

Conclusion

- If decision-makers are **willing to accept less certainty and a small risk for opposite conclusions**, some **abbreviated searches** are **viable options** for rapid evidence syntheses.
- **Decisions demanding high certainty require comprehensive searches.**
- Impact of abbreviated searches depends on type of intervention, „size“ of the topic, and definition of „changed conclusion“

Discussion

Limitations:

- Central is only useful for RCTs
- External validity (raw database entries vs. real-life)
- Reference entries

Points for discussion:

Limiting the number of databases searched could be more suitable for rapid reviews of pharmacological interventions

⇒ Different streamlined methods for different intervention-types?

More information

Study protocol:

Nussbaumer-Streit, B., I. Klerings, G. Wagner, et al. (2016). "Assessing the validity of abbreviated literature searches for rapid reviews: protocol of a non-inferiority and meta-epidemiologic study." Syst Rev **5**(1): 197.

Main analysis:

Nussbaumer-Streit, B., I. Klerings, G. Wagner, et al. (2018). "Abbreviated literature searches were viable alternatives to comprehensive searches: a meta-epidemiological study." J Clin Epidemiol **Article in Press**.

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