Supplementary material Renin-angiotensin-aldosterone system inhibitors and the risk of mortality in patients with hypertension hospitalized for COVID-19: systematic review and meta-analysis

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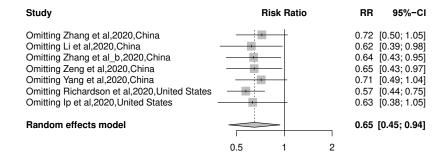|	Topic	Page number
Title	Identify the study as a meta-analysis (or systematic review)	1
Abstract	Use the journal's structured format	2
Introduction	**Present:**	
	The clinical problem	4-5
	The hypothesis	4 -5
	A statement of objectives that includes the study population, the condition of interest, the exposure or intervention, and the outcome(s) considered	4-5
Sources	**Describe:**	
	Qualifications of searchers (eg, librarians and investigators)	5
	Search strategy, including time period included in the synthesis and keywords	5
	Effort to include all available studies, including contact with authors	5
	Databases and registries searched	5
	Search software used, name and version, including special features used (e.g. explosion)	5
	Use of hand searching (e.g, reference lists of obtained articles)	5
	List of citations located and those excluded, including justification	5
	Method of addressing articles published in languages other than English	5
	Method of handling abstracts and unpublished studies	5
	Description of any contact with authors	5
Study Selection	**Describe**	
	Types of study designs considered	6
	Relevance or appropriateness of studies gathered for assessing the hypothesis to be tested	6
	Rationale for the selection and coding of data (eg, sound clinical principles or convenience)	7
	Documentation of how data were classified and coded (eg, multiple raters, blinding, and inter-rater reliability)	6
	Assessment of confounding (e.g. comparability of cases and controls in studies where appropriate)	7
	Assessment of study quality, including blinding of quality assessors; stratification or regression on possible predictors of study results	7
	Assessment of heterogeneity	7
	Statistical methods (eg, complete description of fixed or random effects models, justification of whether the chosen models account for predictors of study results, dose-response models, or cumulative meta-analysis) in sufficient detail to be replicated	7
Results	**Present**	
	A graph summarizing individual study estimates and the overall estimate	Figure 2
	A table giving descriptive information for each included study	Table 1

	Results of sensitivity testing (eg, subgroup analysis)		8-9
	Indication of statistical uncertainty of findings		8-9
Discussion	**Discuss**		
	Strengths and weaknesses		12
	Potential biases in the review process (eg, publication bias)		12

Supplemental Table 1: Meta-Analyses and Systematic Reviews of Observational Studies (MOOSE) checklist

Supplemental text 1: PubMed Search Terms

((((((("receptors, angiotensin"[MeSH Terms] OR "angiotensin"[All Fields])) OR "angiotensin receptors"[All Fields]) OR ("angiotensin"[All Fields] OR "((((("angiotensin converting enzyme inhibitors"[Pharmacological Action] OR "angiotensin-converting enzyme inhibitors"[MeSH Terms]) OR ("angiotensin converting enzyme inhibitors"[All Fields]) OR OR "ace inhibitor"[All Fields]) OR "angiotensin-converting enzyme inhibitors"[MeSH Terms]) OR angiotensin converting enzyme inhibitors"[All Fields])

Supplementary Figure 1. Influential sensitivity analysis of random-effects meta-analysis of studies evaluating the association of ACEi/ARB with mortality in patients with hypertension hospitalized with COVID-19 (only study population hypertension)

Study	Risk Ratio	RR	95%−CI
Omitting Zhang et al,2020,China		0.72	[0.50; 1.05]
Omitting Li et al,2020,China		0.62	[0.39; 0.98]
Omitting Zhang et al_b,2020,China		0.64	[0.43; 0.95]
Omitting Zeng et al,2020,China		0.65	[0.43; 0.97]
Omitting Yang et al,2020,China		0.71	[0.49; 1.04]
Omitting Richardson et al,2020,United States		0.57	[0.44; 0.75]
Omitting Ip et al,2020,United States		0.63	[0.38; 1.05]
Random effects model		**0.65**	**[0.45; 0.94]**

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Supplemental material

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Supplementary Figure 2. Sensitivity analysis comparing RR estimates between studies with only

mixture of patients with and without hypertension compared to studies consisting of only

individuals with hypertension