

REVIEW ARTICLE

A systematic review of immunogenicity and safety of influenza subunit vaccines and split vaccines

Supplementary Files

S1. MOOSE reporting guideline

Table S1. MOOSE reporting guideline

Item no.	Recommendation	Reported on page
Reporting of background should include		
1	Problem definition	3–4
2	Hypothesis statement	3–4
3	Description of study outcome (s)	3–4
4	Type of exposure or intervention used	3–4
5	Type of study designs used	4
6	Study population	4–5
Reporting of search strategy should include		
7	Qualifications of searchers (e.g., librarians and investigators)	4
8	Search strategy, including the time period included in the synthesis and keywords	4, S2
9	Effort to include all available studies, including contact with authors	4
10	Databases and registries searched	4
11	Search software used, name and version, including special features used (e.g., explosion)	4
12	Use of hand searching (e.g., reference lists of obtained articles)	4
13	List of citations located and those excluded, including justification	4–5
14	Method of addressing articles published in languages other than English	4–5
15	Method of handling abstracts and unpublished studies	4–5
16	Description of any contact with authors	N/A
Reporting of methods should include		
17	Description of relevance or appropriateness of studies assembled for assessing the hypothesis to be tested	5–6
18	Rationale for the selection and coding of data (e.g., sound clinical principles or convenience)	5–6
19	Documentation of how data were classified and coded (e.g., multiple raters, blinding, and interrater reliability)	5–6
20	Assessment of confounding (e.g., comparability of cases and controls in studies where appropriate)	5–6
21	Assessment of study quality, including blinding of quality assessors, stratification, or regression on possible predictors of study results	5–6
22	Assessment of heterogeneity	5–6
23	Description of statistical methods (e.g., 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	5–6
24	Provision of appropriate tables and graphics	5–6
Reporting of results should include		
25	Graphic summarizing individual study estimates and overall estimate	18–23, S3

(Cont'd...)

Table S1. (Continued)

Item no.	Recommendation	Reported on page
26	Table with descriptive information for each study included	19–21
27	Results of sensitivity testing (e.g., subgroup analysis)	7–10
28	Indication of statistical uncertainty of findings	7–10
Reporting of discussion should include		
29	Quantitative assessment of bias (e.g., publication bias)	12–13
30	Justification for exclusion (e.g., exclusion of non-English language citations)	4–5
31	Assessment of quality of included studies	7, S3
Reporting of conclusions should include		
32	Consideration of alternative explanations for observed results	13
33	Generalization of the conclusions (i.e., appropriate for the data presented and within the domain of the literature review)	13
34	Guidelines for future research	13
35	Disclosure of funding source	14

Note: Further details on item no. 8 can be found in S2. Search strategy. Further details on items no. 25 and 31 can be found in S3. Quality assessment of included studies.

Abbreviation: MOOSE: Meta-analysis of Observational Studies in Epidemiology.

S2. Search strategy

S2.1. PubMed research

((“Vaccines”[MeSH Terms] OR “Vaccines”[Title/Abstract] OR “vaccine”[Title/Abstract] OR “vaccination”[Title/Abstract] OR “vaccinations”[Title/Abstract])

AND

“influenza, human”[MeSH Terms]

AND

(“vaccination”[MeSH Terms] OR “Immunization”[MeSH Terms] OR “Immunization”[Title/Abstract] OR “Immunogenicity”[Title/Abstract] OR “Antigenicity”[Title/Abstract] OR “Immunize”[Title/Abstract] OR “immunology”[Title/Abstract] OR “Immunize”[Title/Abstract] OR “Immunization”[Title/Abstract] OR (“Safety”[MeSH Terms] OR “Safety”[Title/Abstract] OR “Safeties”[Title/Abstract] OR “adverse effects”[Title/Abstract] OR “side effects”[Title/Abstract]))

AND

((“clinical”[Title/Abstract] AND “trial”[Title/Abstract]) OR “clinical trials as topic”[MeSH Terms] OR “clinical trial”[Publication Type] OR “random*”[Title/Abstract] OR “random allocation”[MeSH Terms] OR “therapeutic use”[MeSH Subheading]))

AND

(2013:2024[pdat])

S2.2. Cochrane research

(influenza):ti,ab,kw

AND

(Vaccines):ti,ab,kw OR (vaccination):ti,ab,kw OR (vaccinations):ti,ab,kw OR (vaccine):ti,ab,kw)

AND

(Immunization):ti,ab,kw OR (Immunogenicity):ti,ab,kw OR (Immunise):ti,ab,kw OR (immunology):ti,ab,kw OR (Immunize):ti,ab,kw)

AND

(Antigenicity):ti,ab,kw OR (Immunization):ti,ab,kw (Word variations have been searched) (Safety):ti,ab,kw OR (Safeties):ti,ab,kw OR (adverse effects):ti,ab,kw OR (side effects):ti,ab,kw)

S2.3. Embase research

(influenza²/exp)

AND

(“Vaccines”/exp) OR (Vaccines: ti,ab OR vaccine: ti,ab OR vaccination: ti,ab OR vaccinations: ti,ab)

AND

((“vaccination”/exp OR “Immunization”/exp) OR (Immunization: ti,ab OR Immunogenicity: ti,ab OR Antigenicity: ti,ab OR Immunise: ti,ab OR immunology: ti,ab OR Immunize: ti,ab OR Immunisation: ti,ab))OR (“Safety”/exp) OR (Safety: ti,ab OR Safeties: ti,ab OR adverse effects: ti,ab OR side effects: ti,ab)

AND

(“clinical”:ti,ab AND “trial”:ti,ab) OR “clinical trial”/exp OR random* OR “drug therapy”:lnk

AND

[humans]/lim AND [2013-2024]/py

S3. Quality assessment of included studies

Table S1. Quality assessment of included studies

First author	Year	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias	References
Scheifele <i>et al.</i>	2013	Low	Low	Low	Low	Low	Low	Low	1
Knuf <i>et al.</i>	2015	Unclear	Unclear	Low	Low	Low	Low	Low	2
Vesikari <i>et al.</i>	2020	Low	Low	Low	Low	Low	Low	Low	3
Beran <i>et al.</i>	2021	Low	Low	Low	Low	Low	Low	Low	4
Yoo <i>et al.</i>	2018	High	Unclear	Unclear	Low	Low	Low	Low	5
Hartvickson <i>et al.</i>	2015	Low	Low	Low	Low	Low	Low	Low	6
Cruz-Valdez <i>et al.</i>	2018	Low	Low	Low	Low	Unclear	Low	Low	7
Knuf <i>et al.</i>	2014	Unclear	Unclear	Low	Low	Low	Low	Low	8
Basu <i>et al.</i>	2021	Low	Low	Low	Low	Low	Low	Low	9
Diallo <i>et al.</i>	2018	Low	Low	Low	Low	Unclear	Low	Low	10
Zhang <i>et al.</i>	2022	Low	Low	Low	Low	Low	Low	Low	11
Choi <i>et al.</i>	2017	Low	Low	Low	Low	Low	Low	Low	12
Bart <i>et al.</i>	2016	Low	Low	Low	Low	Low	Low	Low	13
Vesikari <i>et al.</i>	2018	Low	Unclear	Low	Low	Low	Low	Low	14
Mcbride <i>et al.</i>	2016	Low	Low	Low	Low	Low	Low	Low	15
Frey <i>et al.</i>	2014	Low	Low	Low	Low	Low	Low	Low	16
Cowling <i>et al.</i>	2020	Low	Low	Low	Low	Low	Low	Unclear	17
Loeb <i>et al.</i>	2021	Low	Low	Low	Low	Low	Low	Low	18
Eun <i>et al.</i>	2019	Low	Low	Low	Low	Low	Low	Low	19
Oh <i>et al.</i>	2018	Low	Low	Low	Low	Low	Low	Low	20
Moehling <i>et al.</i>	2020	Unclear	High	Low	Low	Unclear	Low	Low	21
Nolan <i>et al.</i>	2016	Low	Low	Low	Low	Low	Low	Low	22
Diez-Domingo <i>et al.</i>	2016	Low	Low	Low	Low	Low	Low	Low	23
NCT02255409	2015	Unclear	Unclear	Low	Low	Low	Low	Low	24

References

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