EVMS JC: Critical Appraisal Worksheet: Systematic Review/Meta-analysis

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Reviewer: Will Dalkin

Citation: Abrams JY, Godfred-Cato SE, Oster ME, Chow EJ, Koumans EH, Bryant B, Leung JW, Belay ED. Multisystem Inflammatory Syndrome in Children Associated with Severe Acute Respiratory Syndrome Coronavirus 2: A Systematic Review. J Pediatr. 2020 Nov;226:45-54.e1.

Guide	
1. Did the review explicitly address a sensible question?	Yes – to compare and summarize publications to better understand the clinical picture of MIS-C
2. Was the search for relevant studies details and exhaustive?	- Used a broad range of keywords and several databases which is good - Difficult literature search given the novelty of the disease and non-uniform definitions - Short time frame: only 3 months
3. Were the primary studies of high methodological quality? PRISMA guidelines for quality? Oxford Quality or Jadad Score?	- 8 primary studies with 440 pts - Case studies, observational cohort, retrospective case review, prospective observational study, review with descriptive analysis, targeted surveillance study, observational study, retrospective case review with comparison - The authors did not explicitly state they used PRISMA checklist to develop their systematic review
4. Were the criteria for study inclusion pre-determined and clearly stated?	- Pre-determined: yes, clearly stated: partially. They used a mixture of case definitions. Studies with pts meeting 4 criteria OR Kawasaki disease and covid link. Also at least 5 cases. - Exclusion: over 1k studies identified by searches, but only 20 had big enough cohorts. Some studies had overlap populations.
5. Did the authors adequately assess the quality of the included studies?	- I would say no. There was no real discussion on the actual quality of the studies. This may in part be due to the limited availability of data on the topic. And they were only compiling objective data.
CLINICAL IMPORTANCE	
6. What were the overall results of the review? *(Are the results of all included studies clearly displayed? Are the results similar from study to study? Is there a clinical bottom line? If the study results combined, was it appropriate to do so?)*	- A better understanding of MIS-C clinical manifestations: common symptoms and involvement, fever, gi, cv, mucocutaneous - There are some distinct differences between MIS-C and KD - There are good summary tables of demographics and lab values from the various studies included - There is a combined table of “symptoms” which is very useful

7. How precise are the results? *(What were the confidence intervals? p-values?)*	- There are no CI. They use IQR (interquartile range) for lab values - Inner 50% of values - Very difficult to determine precision based of this info - P values for symptoms and therapeutics: - For symptoms, no major difference between MIS-C, KD, broader group - For therapies, only difference was in IVIG frequency in KD group
8. Were the results similar from study to study?	- Similar demographics, especially when comparing to KD cohorts - Similar trends in laboratory data
APPLICABILITY	
9. How can I best interpret the results to apply them to the care of my patients?	- Recognition of potential MIS-C - Differentiation between KD (age, non-asian) - Common therapeutics of MIS-C
10. Were all patient important outcomes considered?	- Serology, LOS, mortality, (<2%), organ systems, affected all reported. Despite low respiratory symptom prevalence (14%) intubation occurred in 26%. No long-term patient centered follow-up data provided (disability, return to normal activities etc.)
11. Are the benefits worth the costs and potential risks?	- Benefit = recognition and diagnosis of MIS-C - There is not much risk, as these cases typically begin with high clinical suspicion and diagnosis

Limitations:

- Mostly retrospective results and summary of findings.
- Not a ton of true comparative analysis
- Inconsistent reporting fashions between studies (heterogeneity)
- At the time of this study there was no universal MIS-C definition
- Not much info on therapy efficacy and pt outcomes

Clinical Bottom Line:

- MIS-C has a more definable presentation than previously realized and is more distinct from KD than initially hypothesized.