**Supplementary material**

**Table 1E** CHEC-extended and CHEERS checklist

*CHEC-extended*

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| **No.** | **Checklist details** |
| 1 | Is the study population clearly described? |
| 2 | Are competing alternatives clearly described? |
| 3 | Is a well-defined research question posed in answerable form? |
| 4 | Is the economic study design appropriate to the stated objective? |
| 5 | Are the structural assumptions and the validation methods of the model properly reported? |
| 6 | Is the chosen time horizon appropriate in order to include relevant costs and consequences? |
| 7 | Is the actual perspective chosen appropriate? |
| 8 | Are all important and relevant costs for each alternative identified? |
| 9 | Are all costs measured appropriately in physical units? |
| 10 | Are costs valued appropriately?  |
| 11 | Are all important and relevant outcomes for each alternative identified? |
| 12 | Are all outcomes measured appropriately?  |
| 13 | Are outcomes valued appropriately?  |
| 14 | Is an appropriate incremental analysis of costs and outcomes of alternatives performed?  |
| 15 | Are all future costs and outcomes discounted appropriately? |
| 16 | Are all important variables, whose values are uncertain, appropriately subjected to sensitivity analysis?  |
| 17 | Do the conclusions follow from the data reported? |
| 18 | Does the study discuss the generalizability of the results to other settings and patient/client groups? |
| 19 | Does the article/report indicate that there is no potential conflict of interest of study researcher(s) and funder(s)?  |
| 20 | Are ethical and distributional issues discussed appropriately? |

*CHEERS-statement*

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| **No.** | **Checklist details** |
| 1. Title | Identify the study as an economic evaluation, or use more specific terms such as ‘‘cost-effectiveness analysis’’ and describe the interventions compared. |
| 2. Abstract | Provide a structured summary of objectives, perspective, setting, methods (including study design and inputs), results (including base-case and uncertainty analyses), and conclusions. |
| 3. Background and objectives | Provide an explicit statement of the broader context for the study. Present the study question and its relevance for health policy or practice decisions. |
| 4. Target population and subgroups | Describe characteristics of the base-case population and subgroups analyzed including why they were chosen. |
| 5. Setting and location | State relevant aspects of the system (s) in which the decision (s) need (s) to be made. |
| 6. Study perspective | Describe the perspective of the study and relate this to the costs being evaluated. |
| 7. Comparators | Describe the interventions or strategies being compared and state why they were chosen. |
| 8. Time horizon | State the time horizon(s) over which costs and consequences are being evaluated and say why appropriate. |
| 9. Discount rate | Report the choice of discount rate(s) used for costs and outcomes and say why appropriate. |
| 10. Choice of health outcomes | Describe what outcomes were used as the measure(s) of benefit in the evaluation and their relevance for the type of analysis performed. |
| 11. Measurement of effectiveness | Single study–based estimates: Describe fully the design features of the single effectiveness study and why the single study was a sufficient source of clinical effectiveness data. |
|   | Synthesis-based estimates: Describe fully the methods used for the identification of included studies and synthesis of clinical effectiveness data. |
| 12. Measurement and valuation of preference-based outcomes | If applicable, describe the population and methods used to elicit preferences for outcomes. |
| 13. Estimating resources and costs | Single study–based economic evaluation: Describe approaches used to estimate resource use associated with the alternative interventions. Describe primary or secondary research methods for valuing each resource item in terms of its unit cost. Describe any adjustments made to approximate to opportunity costs. |
|   | Model-based economic evaluation: Describe approaches and data sources used to estimate resource use associated with model health states. Describe primary or secondary research methods for valuing each resource item in terms of its unit cost. Describe any adjustments made to approximate to opportunity costs. |
| 14. Currency, price date, and conversion | Report the dates of the estimated resource quantities and unit costs. Describe methods for adjusting estimated unit costs to the year of reported costs if necessary. Describe methods for converting costs into a common currency base and the exchange rate. |
| 15. Choice of model | Describe and give reasons for the specific type of decision-analytic model used. Providing a figure to show model structure is strongly recommended. |
| 16. Assumptions | Describe all structural or other assumptions underpinning the decision-analytic model. |
| 17. Analytic methods | Describe all analytic methods supporting the evaluation. This could include methods for dealing with skewed, missing, or censored data; extrapolation methods; methods for pooling data; approaches to validate or make adjustments (e.g., half-cycle corrections) to a model; and methods for handling population heterogeneity and uncertainty. |
| 18. Study parameters | Report the values, ranges, references, and if used, probability distributions for all parameters. Report reasons or sources for distributions used to represent uncertainty where appropriate. Providing a table to show the input values is strongly recommended. |
| 19. Incremental costs and outcomes | For each intervention, report mean values for the main categories of estimated costs and outcomes of interest, as well as mean differences between the comparator groups. If applicable, report incremental cost-effectiveness ratios. |
| 20. Characterizing uncertainty | Single study–based economic evaluation: Describe the effects of sampling uncertainty for estimated incremental cost, incremental effectiveness, and incremental cost-effectiveness, together with the impact of methodological assumptions (such as discount rate, study perspective).  |
|   | Model-based economic evaluation: Describe the effects on the results of uncertainty for all input parameters, and uncertainty related to the structure of the model and assumptions. |
| 21. Characterizing heterogeneity | If applicable, report differences in costs, outcomes, or cost-effectiveness that can be explained by variations between subgroups of patients with different baseline characteristics or other observed variability in effects that are not reducible by more information. |
| 22. Study findings, limitations, generalizability, and current knowledge | Summarize key study findings and describe how they support the conclusions reached. Discuss limitations and the generalizability of the findings and how the findings fit with current knowledge. |
| 23. Source of funding | Describe how the study was funded and the role of the funder in the identification, design, conduct, and reporting of the analysis. Describe other nonmonetary sources of support. |
| 24. Conflicts of interest | Describe any potential for conflict of interest among study contributors in accordance with journal policy. In the absence of a journal policy, we recommend authors comply with International Committee of Medical Journal Editors’ recommendations. |

**Table 2E** Search results

*EMBASE*

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| --- | --- | --- |
| **No** | **Key words** | **Results** |
| 1 | exp health economics/ | 759165 |
| 2 | exp health care cost/ | 258349 |
| 3 | exp quality of life/ | 407588 |
| 4 | economic$.tw. | 275871 |
| 5 | (cost? or costing? or costly or costed).tw. | 626335 |
| 6 | (price? or pricing?).tw. | 46826 |
| 7 | (pharmacoeconomic? or (pharmaco adj economic?)).tw. | 7631 |
| 8 | budget$.tw. | 32424 |
| 9 | expenditure$.tw. | 63022 |
| 10 | (value adj1 (money or monetary)).tw. | 656 |
| 11 | (fee or fees).tw. | 20076 |
| 12 | "quality of life".tw. | 341261 |
| 13 | qol$.tw. | 57215 |
| 14 | hrqol$.tw. | 19927 |
| 15 | "quality adjusted life year$".tw. | 14482 |
| 16 | qaly$.tw. | 15313 |
| 17 | cba.tw. | 11933 |
| 18 | cea.tw. | 29905 |
| 19 | cua.tw. | 1222 |
| 20 | utilit$.tw. | 231342 |
| 21 | markov$.tw. | 24051 |
| 22 | monte carlo.tw. | 38366 |
| 23 | (decision adj2 (tree$ or analys$ or model$)).tw. | 23538 |
| 24 | ((clinical or critical or patient) adj (path? or pathway?)).tw. | 8279 |
| 25 | (managed adj2 (care or network?)).tw. | 21187 |
| 26 | or/1-25 | 2068371 |
| 27 | asthma/ | 210539 |
| 28 | cost-effectiveness.ab. or cost-effectiveness.ti. | 69508 |
| 29 | cost-utility.ab. or cost-utility.ti. | 5874 |
| 30 | economic evaluation.ab. or economic evaluation.ti. | 10447 |
| 31 | 28 or 29 or 30  | 77064 |
| 32 | 26 and 27 and 31 | 833 |

*National Health Service Economic Evaluation Database (NHS EED)*

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| **No** | **Key words** | **Results** |
| 1 | (asthma) AND (economic evaluation) | 306 |

*PubMed*

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| --- | --- | --- |
| **No** | **Key words** | **Results** |
| 1 | "Economics"[Mesh:NoExp] | 26868 |
| 2 | "Costs and Cost Analysis"[Mesh] | 212433 |
| 3 | "Economics, Dental"[Mesh:NoExp] | 1891 |
| 4 | "Economics, Hospital"[Mesh] | 22668 |
| 5 | "Economics, Medical"[Mesh:NoExp] | 8936 |
| 6 | "Economics, Nursing"[Mesh] | 3978 |
| 7 | "Economics, Pharmaceutical"[Mesh] | 2741 |
| 8 | economic\*[Title/Abstract] or cost[Title/Abstract] or costs[Title/Abstract] or costly[Title/Abstract] or costing[Title/Abstract] or price[Title/Abstract] or prices[Title/Abstract] or pricing[Title/Abstract] or pharmacoeconomic\*[Title/Abstract] | 667503 |
| 9 | expenditure\*[Title/Abstract] not energy[Title/Abstract] | 25150 |
| 10 | value for money[Title/Abstract] | 1296 |
| 11 | budget\*[Title/Abstract] | 25327 |
| 12 | #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 | 797131 |
| 13 | energy cost[Title/Abstract] OR oxygen cost[Title/Abstract] | 3627 |
| 14 | metabolic cost[Title/Abstract] | 1201 |
| 15 | energy expenditure[Title/Abstract] OR oxygen expenditure[Title/Abstract] | 22022 |
| 16 | #13 or #14 or #15 | 25933 |
| 17 | #12 not #16 | 791178 |
| 18 | letter[Publication Type] | 977413 |
| 19 | editorial[Publication Type] | 451143 |
| 20 | historical article[Publication Type] | 378748 |
| 21 | #18 or #19 or #20  | 1789597 |
| 22 | #17 not #21 | 756553 |
| 23 | animals[mesh:noexp] | 6160288 |
| 24 | humans[mesh] | 16907582 |
| 25 | #23 not (#23 and #24) | 4396874 |
| 26 | #22 not #25 | 710410 |
| 27 | Asthma[Mesh] | 118482 |
| 28 | cost-effectiveness[Title/Abstract] OR cost-utility[Title/Abstract] OR economic evaluation[Title/Abstract] | 55568 |
| 29 | #26 and #27 and #28 | 390 |

*Tufts CEA Registry*

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| **No** | **Key words** | **Results** |
| 1 | (asthma) AND (economic evaluation) | 58 |