Supplementary APPENDIX

Search Strategies Developed for MEDLINE

1. exp Asthma/

2. Respiratory Sounds/

3. wheez$.mp.

4. Bronchial Spasm/

5. bronchospas$.mp.

6. (bronch$ adj3 spasm$).mp.

7. bronchoconstrict$.mp.

8. asthma$.mp.

9. (antiasthma$ or anti-asthma$).mp.

10. exp Bronchoconstriction/

11. (bronch$ adj3 constrict$).mp.

12. Bronchial Hyperreactivity/

13. Respiratory Hypersensitivity/

14. ((bronchial$ or respiratory or airway$ or lung$) adj3 (hypersensitiv$ or hyperreactiv$

    or allerg$ or insufficiency)).mp.

15. or/1-14

16. Epidemiology/

17. morbidity/ or incidence/ or prevalence/ or mortality/

18. (disability-adjusted life years or disability adjusted life years or DALY$).mp.

19. Quality-Adjusted Life Years/ or (quality adjusted life years or QALY$).mp.

20. years lived with disability.mp.

21. years life lost.mp.

22. potential years of life lost.mp.

23. healthy years of life lost.mp.

24. active life expectancy.mp.

25. (disability-free life expectancy or disability free life expectancy).mp.

26. (disability-adjusted life expectancy or disability adjusted life expectancy).mp.

27. (Healthy life expectancy or HALE).mp.

28. (quality adjusted life expectancy or quality-adjusted life expectancy).mp.

29. vital statistics/ or life expectancy/ or life tables/

30. "costs and cost analysis"/ or "cost of illness"/ or health care costs/ or drug costs/ or hospital costs/ or health expenditures/

31. Hospitalization/ or hospitalisation.mp.

32. Primary Health Care/ or Ambulatory Care/ or Emergency Service, Hospital/ or absentee$.mp.

33. burden$.mp.

34. or/16-33

35. model$.mp. or exp models, statistical/ or exp regression analysis/ or odds ratio/ or monte carlo method/ or markov chains/ or Markov.mp.

36. (estimat$ or projection$ or projecting).ti.

37. exp Forecasting/

38. or/35-37

39. 15 and 34 and 38

Search Strategies Developed for EMBASE

1. exp asthma/

2. asthma$.mp.

3. (antiasthma$ or anti-asthma$).mp.

4. abnormal respiratory sound/

5. wheez$.mp.

6. bronchospasm/

7. bronchospas$.mp.

8. (bronch$ adj3 spasm$).mp.

9. bronchoconstrict$.mp.

10. bronchoconstriction/

11. (bronch$ adj3 constrict$).mp.

12. bronchus hyperreactivity/

13. respiratory tract allergy/

14. ((bronchial$ or respiratory or airway$ or lung$) adj3 (hypersensitiv$ or hyperreactiv$
    or allerg$ or insufficiency)).mp.

15. or/1-14

16. epidemiology/

17. Prevalence/ or Incidence/ or Morbidity/ or Mortality/

18. burden$.mp.

19. (disability-adjusted life years or disability adjusted life years or DALY$).mp.

20. quality adjusted life year/ or (quality-djusted life years or QALY$).mp.

21. years lived with disability.mp.

22. years life lost.mp.

23. potential years of life lost.mp.

24. healthy years of life lost.mp.

25. Vital statistics/ or Life expectancy/ or Life tables/

26. active life expectancy.mp.

27. (disability-free life expectancy or disability free life expectancy).mp.

28. (disability-adjusted life expectancy or disability adjusted life expectancy).mp.

29. (Healthy life expectancy or HALE).mp.

30. (quality adjusted life expectancy or quality-adjusted life expectancy).mp.

31. "health care cost"/ or "drug cost"/ or "hospital cost"/ or "hospitalization cost"/ or "cost"/ or "cost of illness"/

32. hospitalization/ or Hospitalisation.mp.

33. primary health care/ or medical care/ or emergency care/ or emergency treatment/ or emergency health service/ or ambulatory care/ or absenteeism/

34. or/16-33

35. model/ or loglinear model/ or population model/ or mathematical model/ or proportional hazards model/ or statistical model/ or stochastic model/ or markov chain/ or Markov.mp.

36. (estimat$ or projection$ or projecting).mp.

37. "prediction and forecasting"/

38. or/35-37

39. 15 and 34 and 38

Model evaluation checklist and scoring framework

Checklist

Checklist item	Score obtained (Yes = 1, No = 0)
Strength	
Objective/purpose: 1. Whether there is clear statement about the questions that the model aimed to answer	

Model formulation and transparency:
Whether there is clear description about
   1. model structure or model statement (including formula)
   2. model specification
   3. model assumptions
   4. model derivation
   5. variable used in the model (response, predictors, potential confounders, lag time)
   6. method of parameter estimation and inference
   7. model building (variable selection) process
   8. model diagnostic and adequacy checking
   9. theoretical ground of the model	

Data:
Whether there is clear description about
   1. source of data
   2. method of data collection (study design)
   3. sample size and determination process
   4. method of assessment (data measurement)	

Model findings:
Whether following information are available
   1. necessary estimates (prevalence/burden measure/incidence)
   2. standard errors and 95% confidence intervals of the estimates
   3. model fit information
   4. compliance of the model findings with real scenario	

Model validation: 1. Whether model validation was performed	
Limitation	
Sensitivity analysis: 1. Whether sensitivity analyses was carried out	
Addressing missing data 1. Whether there is explanation about how missing data were addressed	

Dissemination and expert involvement:
   1. Whether model was disseminated prior to final development of model
   2. Whether expert opinion were incorporated to develop the model	

Policymakers involvement:
   1. Whether policymakers were involved in the model development
   2. Whether any policy was recommended on the basis of model derived findings	

Limitation discussed in the paper: Whether potential methodological limitations of the model were discussed	

Reproducibility	
Reproducibility: 1. Whether model is available and accessible to user 2. Whether data are available 3. Whether codes are available 4. Whether user manual to develop the model is available	

Scoring framework

Criteria	Item	Score assigned	Score obtained
Strength	Objectives of the model	1	
	Model formulation and transparency	9	
	Data	4	
	Model findings	4	
	Model validation	1	
Limitation	Sensitivity analysis	1	
	Addressing missing data	1	
	Dissemination and expert involvement	2	
	Policymakers involvement	2	
	Limitation discussed in the paper	1	
Reproducibility	Reproducibility of the model	4	
Total		30	