
Article:
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Appendix 1: Modified AMSTAR checklist

MODIFIED AMSTAR CHECKLIST

11 questions to help you make sense the quality of simulation reviews

Notes

This checklist is originally adapted from Shea *et al. BMC Medical Research Methodology* 2007 **7**:10. DOI: 10.1186/1471-2288-7-10. However, changes were made on the prompts and/or notes presented in questions with aim of designing a generic tool applicable for assessing the quality of simulation reviews.

How to use this appraisal tool

The 11 questions on the following pages are designed to help you think about these issues systematically.

There is some degree of overlap between the questions, you are asked to record a "yes", "no", "can't answer" or "not applicable". A number of prompts are given after each question. These are designed to remind you why the question is important and a source of guide. Record your answer using AMSTAR web based checklist (http://www.amstar.ca/Amstar_Checklist.php) accompanied with document listing the modified version of prompts and notes.

- **1 POINTS:** Statistical points should be allocated for each positive answer ("Yes")
- **0 POINTS:** Towards other alternative answers (negative characteristics). ("No", "Can't answer", "Not applicable")
- Maximum score of **11 POINTS** for a perfect quality review.

1. Was an 'a priori' design provided?
The research question and inclusion criteria should be established before the conduct of the review.

□ Yes
□ No
□ Can't answer
□ Not applicable

Note: Need to refer to a protocol, methods, search strategy, or pre-determined/a priori published research objectives to score a "yes."

2. Was there duplicate study selection and data extraction?
There should be at least two independent data extractors and a consensus procedure for disagreements should be in place.

□ Yes
□ No
□ Can't answer
□ Not applicable

Note: 2 people do study selection, 2 people do data extraction, consensus process or one person checks the other's work.

3. Was a comprehensive literature search performed?
At least two electronic sources should be searched. The report must include years and databases used (e.g., JSTOR, EJOR). Key words and/or MESH terms must be stated and where feasible the search strategy should be provided.

□ Yes
□ No
□ Can't answer
□ Not applicable

Note: If at least 2 sources + keyword and/or strategy used, select "yes" (a grey literature search counts as supplementary).

4. Was the status of publication (i.e. grey literature) used as an inclusion criterion?
The authors should state that they searched for reports regardless of their publication type. The authors should state whether or not they excluded any reports (from the systematic review), based on their publication status, language etc.

□ Yes
□ No
□ Can't answer
□ Not applicable

Note: If review indicates that there was a search for "grey literature" or "unpublished literature," indicate "yes." Single database, dissertations, conference proceedings are all considered grey for this purpose (apart using established publication databases' e.g. JSTOR, EJOR). If searching a source that contains both grey and non-grey, must specify that they were searching for grey/unpublished lit.

5. Was a list of studies (included and excluded) provided?
A list of included and excluded studies should be provided.

□ Yes
□ No
□ Can't answer
□ Not applicable

Note: Acceptable if the excluded studies are referenced and/or total number is presented in a descriptive or diagram format e.g., PRISMA diagram.

6. Were the characteristics of the included studies provided?
In an aggregated form such as a table synthesizing a summary of the reviewed results obtained from the original studies, should be provided (e.g. techniques and its application areas used for simulation modelling) alongside references pointing out studies assessed (e.g. numerical reference).

□ Yes
□ No
□ Can't answer
□ Not applicable

Note: Acceptable if not in table format as long as they are described as above.

7. Was the scientific quality of the included studies assessed and documented?
'A priori' methods of assessment should be provided using scoring tool or checklists to evaluate the quality of assessed studies; for other types of studies alternative items will be relevant.

□ Yes
□ No
□ Can't answer
□ Not applicable

Note: Can include use of a quality scoring tool or checklist, (e.g., CASP), or a description of quality items, with some kind of result for EACH study ("low" or "high" is fine, as long as it is clear which studies scored "low" and which scored "high"; a summary score/range for all studies is acceptable).

8. Was the scientific quality of the included studies used appropriately in formulating conclusions?
The results of the methodological rigor and quality should be considered in the analysis/discussion and the conclusions of the review, and explicitly stated in formulating recommendations.

□ No
□ Can't answer
□ Not applicable

Note: Might say something such as "the results should be interpreted with caution due to poor quality of included studies"; Cannot score "yes" for this question if scored "no" for question 7.

□ Yes

9. Were the methods used to combine the findings of studies appropriate?
For the pooled results, a comparison assessment should be done to ensure the studies were combinable, to assess its diversity (i.e., evaluate different type of simulation technique being used in a table or descriptive format to allocate diversity in the results presented) and appropriateness of method used to combine results, should be taken into consideration (i.e., is it sensible to combine?).

□ Yes
□ No
□ Can't answer
□ Not applicable

Note: Indicate "yes" if a method is used to allocate diversity in the results presented and suitable for the research question assessed (e.g. the type of simulation techniques applied in healthcare).

10. Was the likelihood of publication bias assessed?
An assessment of publication bias can be accepted if it's being accessed via using quality assessment test (e.g. scoring tool, checklists) and / or presented in the discussion by authors highlighting state (being bias or not) of articles' assessed.

□ No
□ Can't answer
□ Not applicable

Note: If no quality assessment test being included and / or articles' bias state is not discussed, score "no". Score "yes" if mentions that publication bias could not be assessed because there were fewer than 10 included studies.

□ Yes

11. Was the conflict of interest included?
Potential sources of support should be clearly acknowledged in the systematic review.

□ Yes
□ No
□ Can't answer
□ Not applicable

Note: To get a "yes," must indicate source of funding or support for the systematic review.

Appendix 2: Search strategies using pearl growing techniques

No.	Search Date	Database and other sources used	Key search strategies	Database sources No. found	Other sources No. found
1	11/5/2017	**Database**: - **Other sources**: Google Scholars (GS), FreeFullPDF (F.PDF), Winter simulation conference archive (WSCA)	1. "Systematic Review" "simulation" "operational research" "health" OR "medical" 2. "Systematic Review" AND discrete-event AND simulation AND operation research AND "health" OR "medical" 3. "Systematic Review" AND system-dynamics AND simulation AND operation research AND "health" OR "medical" 4. "Systematic Review" AND mixed-method OR hybrid AND simulation AND operation research AND "health" OR "medical" 5. "Systematic Review" AND agent-based AND simulation AND operation research AND "health" OR "medical" 6. "Systematic Review" AND monte-carlo AND simulation AND operation research AND "health" OR "medical" 7. "Systematic Review" AND microsimulation OR micro-simulation OR markov-model AND simulation AND operation research AND "health" OR "medical" 8. "Systematic review" AND discrete-event OR system-dynamics OR mixed-method OR hybrid OR agent-based OR monte-carlo OR microsimulation OR micro-simulation OR markov-model AND "simulation" OR modelling AND "health" OR "medical" 9. "Survey" OR "review" AND discrete-event OR system-dynamics OR mixed-method OR hybrid OR agent-based OR monte-carlo OR microsimulation OR micro-simulation OR markov-model AND "simulation" OR modelling AND "health" OR "medical"	-	GS: 45 F.PDF:5 WSCA:2
2	11/5/2017	**Database**: JSTOR **Other sources**: -	1. ((((Systematic review) AND (Simulation)) AND (Resource)) AND (Health)) AND la:(eng OR en) 2. (((((Systematic review) OR (Survey)) OR (review)) AND (Simulation)) AND (Health)) AND la:(eng OR en) 3. (((((((Systematic review) OR (Survey)) OR (review)) AND (discrete-event)) AND (simulation)) OR (modelling)) AND (health)) AND la:(eng OR en) 4. (((((((Systematic review) OR (Survey)) OR (review)) AND (system-dynamics)) AND (simulation)) OR (modelling)) AND (health)) AND la:(eng OR en) 5. (((((((Systematic review) OR (Survey)) OR (review)) AND (mixed-method)) AND (simulation)) OR (modelling)) AND (health)) AND la:(eng OR en) 6. (((((((Systematic review) OR (Survey)) OR (review)) AND (hybrid)) AND (simulation)) OR (modelling)) AND (health)) AND la:(eng OR en) 7. (((((((Systematic review) OR (Survey)) OR (review)) AND (agent-based)) AND (simulation)) OR (modelling)) AND (health)) AND la:(eng OR en) 8. (((((((Systematic review) OR (Survey)) OR (review)) AND (monte-carlo)) AND (simulation)) OR (modelling)) AND (health)) AND la:(eng OR en) 9. (((((((Systematic review) OR (Survey)) OR (review)) AND (markov model)) AND (simulation))	JSTOR: 12	-

			OR (modelling)) AND (health)) AND la:(eng OR en) 10. (((((((Systematic review) OR (Survey)) OR (review)) AND (microsimulation)) OR (micro-simulation)) AND (simulation)) OR (modelling)) AND (health)) AND la:(eng OR en) 11. (((((Academic literature) OR (A review)) AND (simulation)) AND (health)) OR (medical)) AND la:(eng OR en)		
3	11/5/2017	**Database**: SCOPUS **Other sources**: -	1. (TITLE-ABS-KEY (systematic review) OR TITLE-ABS-KEY (survey) OR TITLE-ABS-KEY (review) OR TITLE-ABS-KEY (academic literature) AND TITLE-ABS-KEY (simulation) AND TITLE-ABS-KEY (health) AND TITLE-ABS-KEY (medical)) 2. (TITLE-ABS-KEY (systematic review) OR TITLE-ABS-KEY (survey) OR TITLE-ABS-KEY (review) OR TITLE-ABS-KEY (academic literature) AND TITLE-ABS-KEY (discrete-event) OR TITLE-ABS-KEY (system-dynamics) OR TITLE-ABS-KEY (mixed-method) OR TITLE-ABS-KEY (hybrid) OR TITLE-ABS-KEY (agent-based) OR TITLE-ABS-KEY (monte-carlo) OR TITLE-ABS-KEY (markov-model) OR TITLE-ABS-KEY (microsimulation) OR TITLE-ABS-KEY (micro-simulation) AND TITLE-ABS-KEY (simulation) AND TITLE-ABS-KEY (health) AND TITLE-ABS-KEY (medical)) 3. (TITLE-ABS-KEY (literature) OR TITLE-ABS-KEY (analyse) AND TITLE-ABS-KEY (discrete-event) OR TITLE-ABS-KEY (system-dynamics) OR TITLE-ABS-KEY (mixed-method) OR TITLE-ABS-KEY (hybrid) OR TITLE-ABS-KEY (agent-based) OR TITLE-ABS-KEY (monte-carlo) OR TITLE-ABS-KEY (markov-model) OR TITLE-ABS-KEY (microsimulation) OR TITLE-ABS-KEY (micro-simulation) AND TITLE-ABS-KEY (simulation) AND TITLE-ABS-KEY (health) AND TITLE-ABS-KEY (medical) AND TITLE-ABS-KEY (operational research) AND TITLE-ABS-KEY (management))	SCOPUS: 4	-
4	11/5/2017	**Database**: PUBMED (All databases), ACM **Other sources**: -	**<u>PUBMED (PM)</u>** 1. (((Systematic review[Title/Abstract]) AND simulation) AND resource) AND health 2. (((Systematic review[Title/Abstract] OR survey[Title/Abstract] OR review[Title/Abstract] OR academic literature[Title/Abstract] OR literature[Title/Abstract] OR analyse*[Title/Abstract])) AND simulation) AND (health OR medical) 3. ((((Systematic review[Title/Abstract] OR survey[Title/Abstract] OR review[Title/Abstract] OR academic literature[Title/Abstract] OR literature[Title/Abstract] OR analyse*[Title/Abstract])) AND (discrete-event OR system-dynamics OR mixed-method OR hybrid OR agent-based OR monte-carlo OR microsimulation OR micro-simulation OR markov-model)) AND simulation) AND (health OR medical) 4. (((Systematic review) AND simulation) AND management) AND (health OR medical) **<u>ACM</u>** 1. "systematic review" OR "survey" OR review AND "simulation" AND health OR medical 2. "publish" OR "literature" AND "simulation" AND health OR medical 3. "Systematic review" OR "survey" OR "publish" OR "literature" AND discrete-event OR system-dynamics OR mixed-method OR hybrid OR agent-based OR monte-carlo OR markov-model OR microsimulation OR micro-simulation AND "simulation" AND health OR medical	PM: 14 ACM: 9	-

5	11/5/2017	**Database**: IEEE, SAGE, Wiley Online Library (WILEY) **Other sources**: -	**IEEE** 1. ((((("Document Title":"systematic review" OR survey) AND simulation) AND resource) AND health) 2. (((("Document Title":"systematic review" OR survey OR "academic literature" OR publish OR literature OR review) AND simulation OR model) AND health) 3. ((((("systematic review" OR survey OR "academic literature" OR publish OR literature) AND discrete-event) AND simulation) AND health OR medical) 4. ((((("systematic review" OR survey OR "academic literature" OR publish OR literature) AND system-dynamics OR agent-based) AND simulation) AND health OR medical) 5. ((((("systematic review" OR survey OR "academic literature" OR publish OR literature) AND monte-carlo OR markov-model) AND simulation) AND health OR medical) 6. ((((("systematic review" OR survey OR "academic literature" OR publish OR literature) AND mixed-method OR hybrid) AND simulation) AND health OR medical) 7. ((((("systematic review" OR survey OR "academic literature" OR publish OR literature) AND microsimulation OR micro-simulation) AND simulation) AND health OR medical) 8. ((((("systematic review" OR survey OR "academic literature" OR publish OR literature) AND simulation) AND management) AND health OR medical) **SAGE** **3 selected journals: The Journal of Defence Modelling and Simulation, Simulation & Gaming, and SIMULATION: Transactions of The Society for Modelling and Simulation International* 1. "Systematic review" OR "survey" OR "literature" OR "review" AND "simulation" AND "resource" AND "health" OR "medical" 2. "Systematic review" OR "survey" OR "literature" OR "review" AND discrete-event AND "simulation" OR "model" AND "health" OR "medical" 3. "Systematic review" OR "survey" OR "literature" OR "review" AND system-dynamics AND "simulation" OR "model" AND "health" OR "medical" 4. "Systematic review" OR "survey" OR "literature" OR "review" AND agent-based AND "simulation" OR "model" AND "health" OR "medical" 5. "Systematic review" OR "survey" OR "literature" OR "review" AND mixed-method OR hybrid AND "simulation" OR "model" AND "health" OR "medical" 6. "Systematic review" OR "survey" OR "literature" OR "review" AND monte-carlo OR "markov" AND "simulation" OR "model" AND "health" OR "medical" 7. "Systematic review" OR "survey" OR "literature" OR "review" AND microsimulation OR micro-simulation AND "simulation" OR "model" AND "health" OR "medical" **WILEY** 1. "Systematic review" OR "survey" OR "literature" OR "review" in Article Titles AND "simulation" in All Fields AND "resource" in All Fields AND health in All Fields 2. "Systematic review" OR "survey" OR "literature" OR "review" in Article Titles AND discrete-event OR system-dynamics OR mixed-method OR hybrid OR agent-based OR monte-carlo	IEEE: 5 SAGE: 8 WILEY: 4	-

			OR microsimulation OR micro-simulation OR "markov" in All Fields AND "simulation" OR "model" in All Fields AND health in All Fields 3. "Systematic review" OR "survey" OR "literature" OR "review" in Article Titles AND discrete-event OR system-dynamics OR mixed-method OR hybrid OR agent-based OR monte-carlo OR microsimulation OR micro-simulation OR "markov" in All Fields AND "simulation" OR "model" in All Fields AND operational in All Fields AND "management" in All Fields AND health in All Fields		
6	11/5/2017	**Database**: Science Direct **Other sources**: -	**SD** 1. TITLE-ABSTR-KEY(Systematic review) and (simulation resource operational health) 2. TITLE-ABSTR-KEY("survey" OR "literature" OR "review") and (simulation resource operational health) 3. TITLE-ABSTR-KEY("Systematic review" OR "survey" OR "literature" OR review) and (discrete-event OR system-dynamics OR mixed-method OR hybrid OR agent-based OR monte-carlo OR microsimulation OR micro-simulation OR "markov" AND simulation AND health)	SD: 9	-

*asterisk (*) is used to include alternate endings for terms. For example model*will retrieve models, modelling, etc*

Appendix 3: Information presented in each review article about the studies included

No.	Review	Information presented in each review article
1	Klein *et al.* (1993)	• Introductory articles • Reference software reviews, vendor survey, bibliographies • Simulation texts • Simulation applications: 1. Operational health-system 2. Medical decision-making 3. Miscellaneous (e.g. system dynamics, epidemiology)
2	Fone *et al.* (2003)	• Critical appraisal • Year of publication • Journal type • Country • Simulation applications: 1. Hospital scheduling and organisation 2. Infection and communicable disease 3. Cost and economic evaluations 4. Screening 5. Miscellaneous (e.g. examining policy effects)
3	White (2005)	• Objectives • Data source for simulation modelling • Simulation applications: 1. General health-care 2. Emergency department 3. Other hospital units and services (e.g. mobile robots) 4. Outpatient clinics and treatment centres
4	Hoot *et al.* (2008)	• Critical appraisal • Year of publication • Methods • Applications (Examined causes, effects and solutions of emergency department crowding) • Measured outcomes
5	Sobolev *et al.* (2009)	• Critical appraisal • Year of publication • Journal type • Country • Language • Elements in study description (e.g. patient population, policy) • Methods • Simulation Experiments • System requirements (e.g. flow chart, textual description) • Input and output data • Simulation applications: 1. Waiting-list performance 2. Changes in policy 3. Changes in organisation 4. Changes in management • Results of analysis • Result impacts
6	Jack *et al.* (2009)	• Demand management research agendas: 1. Demand management strategies 2. Health maintenance organisations 3. Vertical/Horizontal integration 4. Multi-hospital systems • Capacity management research agendas: 1. Capacity management strategies 2. Workforce management

		3. Utilisation 4. Subcontracting 5. Information technology • Performance research agendas: 1. Quality of care outcomes 2. Efficiency 3. Financial performance
7	Brailsford *et al.* (2009)	• Year of publication • Country • Initiators • Funding source • Level of implementation • Functional area • Layer in the industry • Methods
8	Mielczarek *et al.* (2010)	• Year of publication • Methods • Tools • Simulation applications: 1. Epidemiology, health promotion and disease prevention 2. Health and care system operation 3. Health and care system design 4. Medical decision making 5. Extreme events planning
9	Paul *et al.* (2010)	• Year of publication • Motivation and goals • Methods • Data source for simulation modelling • Patient classification (e.g. mode of arrival, level of acuity) • Simulation Experiments (e.g. resource, process, related)
10	Mustafee *et al.* (2010)	• Authors • Year of publication • Source titles • Journal type • Institutions • Country • Methods • Simulation applications: 1. Assess health risks 2. Health economics 3. Assessing medical intervention 4. Feasibility studies 5. Assess policy and strategy 6. Training tool 7. Infrastructure modelling (e.g. assess vulnerability of health-care facilities) 8. Geographical health analyses 9. Miscellaneous (e.g. reviews and taxonomies)
11	Cardoen *et al.* (2010)	• Year of publication • Journal type • Methods • Type of analysis (e.g. heuristic, scenario analysis) • Simulation applications: 1. Isolated or integrated operating room 2. PACU 3. Wards 4. ICU • Patient characteristics • Type of constraints (e.g. resource constraints) • Measured outcomes • Decision delineation (e.g. date, time) • Type of uncertainty (e.g. deterministic, stochastic)

		• Applicability of research (e.g. Theoretical or real data)
12	Katsaliaki *et al.* (2010)	• Year of publication • Funding source • Citations • Methods • Tools • Simulation applications: 1. Assess health risks 2. Assess effects of medical intervention 3. Health economics model 4. Assess policy and strategy 5. Feasibility studies 6. Training tool 7. Infrastructure modelling (e.g. assessing vulnerability of health-care facilities) 8. Geographical health analyses 9. Miscellaneous (e.g. reviews and taxonomies)
13	Guerriero *et al.* (2010)	• Decision levels: 1. Strategic 2. Tactical 3. Operational 4. Mixed • Scheduling system (Block or open scheduling system) • Methods (e.g. simulation model, Integer programming) • Criteria (e.g. Number of beds, OR utilisation) • Resources (e.g. beds) • Time constraints (Due or release date) • Length of planning • Type of stochasticity • Experiments (e.g. real or random data) • Solution approach
14	Günal *et al.* (2010)	• Year of publication • Methods justification • Simulation applications: 1. Accident and emergency 2. Inpatient facilities 3. Outpatient clinics 4. Other hospital units (e.g. laboratories) 5. Whole hospital • Project life cycles • Client involvement • Barriers to implementation
15	Van Sambeek *et al.* (2010)	• Type of problem • Applications (e.g. outpatient department) • Objective • Methods (i.e. simulation, descriptive, analytical) • Measured outcomes • Model validation • Simulation applications (i.e. generic or non generic model) • Relation between methods and other categories (i.e. problem type, model type) • Practical implications (e.g. expensive)
16	Fakhimi *et al.* (2012)	• Year of publication • Funding source • UK Regions • Applications: 1. Cost-effective and economic evaluation 2. Improving clinical and administrative performance 3. Literature and methodology review • Methods • Tools
17	Hulshof *et al.* (2012)	• Applications (e.g. ambulatory care services) • Decision levels:

		1. Strategic 2. Tactical 3. Operational • Methods (e.g. simulation, mathematical programming)
18	Van Lent *et al.* (2012)	• Project scope and background (e.g. single department) • Implementation phases (e.g. direct or partial benefit to the hospital) • Quality factors: 1. Technical (e.g. validation) 2. Process (e.g. Client involvement) 3. Outcome (e.g. result presentation) • Evidence simulation leads to improvement
19	Belien *et al.* (2012)	• Year of publication • Blood products type • Methods • Type of analysis • Hierarchical level • Problems (e.g. inbound or outbound problems) • Type of uncertainty (e.g. deterministic, stochastic) • Level of implementation • Measured outcomes
20	Aboueljinane *et al.* (2013)	• Year of publication • Journal type • Design and operation decisions • Measured outcomes • Demand related data (e.g. arrival distribution, arrival rate) • Dispatching rules • Model verification and validation • Experiments • Result analysis
21	Fakhimi *et al.* (2013)	• Year of publication • Journal type • Country • Funding source • Methods • Applications (i.e. cost-effective and economic evaluation, improving clinical and administrative performance, review)
22	Timbie *et al.* (2013)	• Critical appraisal • Year of publication • Country • Methods • Applications (e.g. explosive) • Triage systems
23	Pomey *et al.* (2013)	• Country • Methods • Research design (e.g. empirical studies) • Wait time strategies • Level of implementation • Factors influencing wait time management strategies: 1. Governance 2. Culture 3. Resources 4. Tools • Factors influencing wait time management strategies implementation (e.g. stakeholder engagement) • Barriers and constraints to implementation • Strategies and practices to improve implementation
24	Verbano *et al.* (2013)	• Number of authors • Journal type

		• Country • Methods • Category of tools and practices (e.g., customer/patient management) • Objectives • Applications (e.g. laboratory, hospital in general) • Benefits
25	Lakshmi *et al.* (2013)	• Year of publication • Journal type • Methods • Applications: 1. Design (e.g. ambulatory care) 2. Operation (e.g. resource scheduling) 3. Analysis (e.g. waiting time and utilisation analysis)
26	Mahdavi *et al.* (2013)	• Objectives of model • Motivation • Methods • Tools/language • Model applications: 1. Patient group 2. Process 3. Setting 4. Resource • Outcome (empirical or theoretical results) • Achievement • Relationship between model purpose, technique and results • Relationship between model technique and other dimensions (e.g. setting, resource)
27	Kammoun *et al.* (2014)	• Goals • Simulation applications (e.g. emergency department) • Type of decisions (e.g. long term, mid-term)
28	Carey *et al.* (2015)	• Methods (e.g. simulation, analytical lens)
29	Atkinson *et al.* (2015)	• Simulation applications: 1. Public health policy for prevention or health promotion 2. Healthcare policy • Country • Subject of research (e.g. cervical cancer screening) • Stakeholder participation in model building
30	Baru *et al.* (2015)	• Methods (e.g. simulation, Queuing Technique) • Results of analysis
31	Isern *et al.* (2015)	• Year of publication • Journal type • Subject of research (e.g. simulation, decision support system) • Agent-based applications: 1. Organisation-centred 2. Patient-centred • Staff-centred
32	Gul *et al.* (2015)	• Year of publication • Journal type • Country • Goals (Cost control, Efficiency, Re-engineering, Service quality) • Methods • Data source for simulation modelling • Simulation applications (Normal or disaster ED conditions) • Measured outcomes • Study contribution to literature (e.g. case, method, mix novelties)
33	Vieira *et al.* (2016)	• Applications: 1. Strategic managerial decision making 2. Resource capacity planning 3. Patient prioritization 4. Scheduling • Subject of research (e.g. patient flow analysis) • Decision levels

		• Methods (e.g. simulation, constructive heuristics) • Level of implementation • Results of analysis
34	Mielczarek (2016)	• Methods • Simulation applications: 1. Health policy 2. Healthcare system operation 3. Forecasting 4. Medical decisions 5. Extreme events • The rate of methods used in simulation applications • External determinants influencing methods selection (e.g. time, decision levels) • Objectives
35	Palmer *et al.* (2017)	• Methods • Subject of research (e.g. Community care for asthmatic patients) • Factors influencing the service flow (e.g. treatment pathway) • Output methods (e.g. optimisation) • Level of implementation
36	Soh *et al.* (2017)	• Methods • Patient classification (i.e. patient generators and attributes) • Resource classification (resource attributes) • Measured outcomes
37	Mohiuddin *et al.* (2017)	• Journal type • Methods • Data source for simulation modelling • Stakeholder input • Model validation • Tools • Simulation applications (i.e. generic or specific) • Measured outcomes • Simulation duration • Warm-up period • Total replications • Case study (i.e. hospital name) • Model purpose • Patient flow description • Results of analysis • Level of implementation • Barriers

Appendix 4: Quality assessment results using the modified AMSTAR checklist

No.	Article	Assessed Questions										
		Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**	**Q11**
		Was an 'a priori design provided?'	Was there duplicate study selection and data extraction?	Was a comprehensive literature search performed?	Was the status of publication (grey literature) used and inclusion criterion?	Was a list of studies (included and excluded) provided?	Were the characteristic of the included studies provided?	Was the scientific quality of the included studies assessed and documented?	Was the scientific quality of the included studies used appropriately to formulate conclusion?	Were the methods used to combine the findings of studies appropriate?	Was the likelihood of publication bias assessed? (Any techniques used to prevent bias)	Was the conflict of interest included?
1	Klein et al. (1993)	YES ========== Page 347-349.	YES ========== More than 1 reviewer.	YES ========== Via simulation, industrial engineering, health service research, journal for health systems, operation research and management science journals.	NO ========== Not used.	NO ========== Excluded studies are not being presented.	YES ========== Presented categorically via different sub-sections; 6 sections, page 349 explain.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Presented categorically via different sub-sections, listing type of simulation model used for different application areas.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
2	Fone et al., (2003)	YES ========== Page 2	YES ========== By 3 people	YES ========== Using 8 academic database and 2 grey LR	YES ========== SIGLE and contact researcher directly for other unpublished articles.	YES ========== Flow chart review page 330	NO ========== Not all numerical reference being provided.	YES ========== In the flow chart and table review page 330 and 331 using grade	YES ========== Yes, in discussion page 332.	YES ========== Using table and flow charts.	NO ========== Not assessed in critical appraisal sheet.	NO ========== Not listed

3	White (2005)	YES ========== Page 927.	YES ========== "We" determine more than 2 people conducted data searching	NO ========== Using 1 source, via winter simulation database.	YES ========== Winter simulation database.	NO ========== Excluded studies are not being presented.	YES ========== In a descriptive format, based on area of implementation.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Using a descriptive format, separated by its application areas.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
4	Hoot *et al.* (2008)	YES ========== Page 126-127.	YES ========== Via two reviewers.	NO ========== Only one database is being used, PUBMED.	NO ========== Not stated.	YES ========== Figure 1.	YES ========== Table 1.	YES ========== Using 5 level instrument presented in page 127.	YES ========== In discussion.	YES ========== Using tabular format in table 1-4.	YES ========== Assessment quality level 4.	YES ========== Annals policy
5	Sobolev *et al.* (2009)	YES ========== It is presented clearly at the scope of review, search strategy and inclusion criteria.	YES ========== "We" word is allocated at page 2 "we searched eight electronic databases". Justifying search process is conducted more than 1 person.	YES ========== Using 8 database and clear keyword strategy is emplaced in the appendix.	YES ========== Contacted a number of experts from different country to identify key papers or other publications pg5	YES ========== In figure 2	YES ========== It characteristics is presented clearly to determine comparison of description of simulation experiment, process of care, input data used and presented in percentage using words.	YES ========== Using an appraisal form (11)	NO ========== It's not being stated.	YES ========== Provide a clear understanding on the different elements characteristics from each individual studies assessed.	NO ========== Appraisal form did not list questions related to bias.	NO ========== Source of funding is not displayed.
6	Jack *et al.* (2009)	YES ========== Page 151-152	YES ========== 2 People	YES ========== Only 1 database is used (ABI/INFORMS database), 7 published journals	NO ========== GL is not being used	NO ========== Excluded study is not included.	YES ========== Page 153 table 1-4	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Results is presented using text format. Though it's best represented in a tabular or	NO ========== Not being assessed and only used 1 database that shows author may be bias.	NO ========== Source of funding is not displayed

										graphical format for easier understanding on different techniques being used.		
7	Brailsford *et al.* (2009)	YES ========== Page 131-132.	YES ========== More than 1 reviewer.	YES ========== Via 3 academic databases.	YES ========== Grey literature via google search was used.	YES ========== Provided, however reviewer have to deduct manually to determine excluded total. Table 2.	NO ========== Referenced is not pointed out, affecting reviewer do have the ability to allocate RM applications areas.	NO ========== Quality assessments of articles are not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Yes, presenting techniques that is often used for HC modelling.	NO ========== Not being assessed.	YES ========== EPSRC grant
8	Mielczarek *et al.* (2010)	YES ========== It's presented clearly before review is conducted.	YES ========== There is more than one reviewer "We"	YES ========== Clear detail of the search strategy is presented using credible source.	YES ========== Grey literature is being included (Winter simulation conference database). Though it's not specifically presented in the inclusion criteria.	NO ========== As only total of inclusion criteria is being presented.	YES ========== Based on the type of simulation techniques, year, tool and application.	NO ========== Quality assessment procedure is not being conducted.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result is presented clearly in a table format and technique used is known to be sensible.	NO ========== As no quality assessment test is being conducted or evaluated by author to determine likelihood of bias.	YES ========== Sources of funding is stated for the author by European Regional Development Fund and Polish Government
9	Paul *et al.* (2010)	YES ========== Inclusion and exclusion criteria is added (pg.561;	YES ========== "We" word kept on repeating. Suggesting both authors	YES ========== 5 Academic databases and other searchers used for grey	YES ========== Though it's not stated specifically. However, it was found a	NO ========== As only total of inclusion criteria is being presented.	YES ========== In a graph format in figure 1.	NO ========== Quality assessment procedure is not being conducted.	CAN'T ANSWER ========== As quality assessment is not conducted.	YES ========== Describe diversity towards the results presented	NO ========== As no quality assessment test is being conducted or evaluated by	NO ========== Source of funding is not displayed.

		Methods)	is doing it together.	literature (PROQUEST).	total of 6 on the second phase (pg.561; Methods).					using table and percentage. Meanwhile researcher believes the technique to be sensible and easy to be understood.	author to determine likelihood of bias.	
10	Mustafee et al. (2010)	YES ========== Page 545-547	YES ========== 2 People	NO ========== Only 1 database is used (Web of science)	NO ========== Not used.	YES ========== Table 1 page 547	YES ========== Page 548 and 549	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Using table.	NO ========== Not being assessed and specify in page 1450.	NO ========== Source of funding is not displayed
11	Cardoen et al. (2010)	YES ========== Page 921-922	YES ========== "We" determine more than 2 people conducted data searching	YES ========== Using 4 Academic database	NO ========== Not used.	NO ========== Excluded study is not included.	YES ========== Table 2-10	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Using tabular format in table 2-10.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
12	Katsaliaki *et al.* (2010)	YES ========== Page 1434	YES ========== 2 People	YES ========== 2 Academic databases and keywords provided page 1433.	NO ========== Not used.	NO ========== Only inclusion studies and referenced provided.	YES ========== Table 1 and 2 page 1434 and 1435	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Using table.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
13	Guerriero *et al.* (2010)	YES ========== Page 89-90 and Figure illustrating the exclusion criteria.	YES ========== "We" determine more than 2 people conducted data searching	Can't answer ========== Not stated.	Can't answer ========== Not stated.	NO ========== Excluded studies are not being presented.	YES ========== Table 2-4 and 6.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Using table.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed

14	Günal *et al.* (2010)	YES ========== Page 42.	Can't answer ========== Not stated	Can't answer ========== Not stated, as reviewer used publish or perish application (http://www.harzing.com/pop.htm) to search for articles.	YES ========== By using publish or perish application (http://www.harzing.com/pop.htm) to search for articles.	NO ========== Excluded studies are not being presented.	YES ========== In a descriptive format, based on area of implementation.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Using a descriptive format, separated by its application areas.	NO ========== Not being assessed.	YES ========== Funded by EPSRC
15	Van Sambeek *et al.* (2010)	YES ========== Page 360 (Table I)	YES ========== "We" determine more than 2 people conducted data searching.	YES ========== Articles were found in 3 different academic databases (Page 359-360)	NO ========== Not used.	YES ========== Presented in the discriptions (page 362) and PRISMA diagram (figure 1, page 364)	NO ========== The list of refreences were not presented, but the number of studies were described in tables (e.g. table IV).	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result using tables and charts.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
16	Fakhimi *et al.* (2012)	YES ========== Page 68	YES ========== "We" determine more than 2 people conducted data searching.	NO ========== Only 1 database was used (Web of science)	NO ========== Not used.	NO ========== Only inclusion studies and referenced provided.	YES ========== Some of the results were presented in tables or described alongside references (e.g. application areas).	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result using table and charts.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
17	Hulshof *et al.* (2012)	YES ========== Page 133	YES ========== "We" determine more than 2	YES ========== Articles were found via 5 academic	NO ========== Not used.	NO ========== Only inclusion studies and referenced	YES ========== The results were described	NO ========== Quality assessment of articles is not	CAN'T ANSWER ========== Quality assessment is	YES ========== Pooled result using a table in appendix C.	NO ========== Not being assessed.	YES ========== Dutch Technology Foundation

			people conducted data searching.	databases (Page 133).		provided.	with references within the report. However, a summary of this results were presented in a table (Appendix C)	being evaluated.	not conducted.			STW
18	Van Lent *et al.* (2012)	YES ========== Pg. 1 and 6	YES ========== Conducted by 2 reviewers.	YES ========== Using 2 academic database.	NO ========== Grey literature is not being collected.	YES ========== Figure 1, Pg. 3	NO ========== Not being presented, with numerical referenced to support. But result is described.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled using table.	NO ========== Quality assessment is not conducted to assess publication bias and prove illustrated in page 8.	NO ========== Source of funding is not displayed
19	Belien *et al.* (2012)	YES ========== Page 1-2.	YES ========== 2 reviewers.	YES ========== Via web of science, PubMed, academic search premier, business source premier, Econlit and SCIRIUS.	NO ========== Not stated.	NO ========== Excluded studies are not being presented.	YES ========== Table 1-2.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Using tabular format.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
20	Aboueljinan e *et al.* (2013)	YES ========== Provided page (pg735)	YES ========== More than 1 reviewer.	YES ========== Using 4 academic database, with detail	YES ========== Reviewing reference list within the inclusion	NO ========== No clear indication.	YES ========== Table 1-4	NO ========== Quality assessment of articles is not being	CAN'T ANSWER ========== Quality assessment is not	YES ========== Table 1-4 (description of the studies characteristics	NO ========== Not being assessed.	NO ========== Source of funding is not displayed

				search strategy provided.	articles (pg735)			evaluated.	conducted.	clearly).		
21	Fakhimi *et al.* (2013)	YES ========== Provided page (pg23)	YES ========== More than 1 reviewer.	NO ========== Using 71 database, ISI web science.	NO ========== No indication of grey literature being used.	YES ========== Reference section which is coded by its techniques.	YES ========== Table 2-9	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Table 2-9 (description of the studies characteristics clearly).	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
22	Timbie et al. (2013)	YES ========== Provided page (pg678-679)	YES ========== Were conducted by a single researcher, but reviewed by a second person. (pg677)	YES ========== Using 7 academic database, with detail search strategy provided.	YES ========== 2 grey literature is being used (pg678)	YES ========== At the appendix, that includes both (included and excluded) references and PRISMA diagram presenting the results of data collection.	YES ========== Table 2 (pg681)	YES ========== Using 5-item scale and presented in table 3 (pg682-684)	NO ========== Not illustrated. As author just inform on the use of high-quality studies only (pg686)	YES ========== Table 3 (description strategies).	YES ========== Which was one of the key requirement commissioned by the healthcare research and quality, following the 4 key domains (pg679)	YES ========== With funding support by US department of health and human services (pg687)
23	Pomey et al. (2013)	YES ========== There are 5 question evaluated (pg2)	YES ========== Conducted by more than one members.	YES ========== 6 medical databases and 19 None-medical database and keywords presented.	YES ========== Used grey literature example from Canadian and other international studies	YES ========== Page 4 and 5 (PRISMA diagram)	YES ========== Page 6 (Comparing factors, and level)	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Using a table and elaborated page 7-16.	NO ========== Quality assessment is not conducted to assess publication bias.	YES ========== Funded by CIHR (IHSPR) grant
24	Verbano *et al.* (2013)	YES ========== Pg.429	YES ========== Conducted by 2 persons.	YES ========== Using 5 database and keywords presented.	NO ========== Grey literature is not being collected.	NO ========== Excluded studies are not presented.	YES ========== Table 2-3	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled using table.	NO ========== Quality assessment is not conducted to assess publication bias.	NO ========== Source of funding is not displayed.
25	Lakshmi *et*	YES	YES	YES	YES	NO	YES	NO	CAN'T	YES	NO	NO

	al. (2013)	========== Page 26	========== 2 persons.	========== Using 5 Academic database and 1 grey LR	========== Using conference proceedings articles.	========== Excluded study is not included.	========== Table 2,3,4	========== Quality assessment of articles is not being evaluated.	ANSWER ========== Quality assessment is not conducted.	========== Using tabular format in table 2-4.	========== Not being assessed.	========== Source of funding is not displayed
26	Mahdavi *et al.* (2013)	YES ========== Page 273-274 and Figure illustrating the exclusion criteria.	YES ========== 2 reviewers.	YES ========== 2 Academic databases (SCOPUS and PUBMED) illustrated at the abstract.	NO ========== Not used.	YES ========== Figure 1.	YES ========== Table 1-11	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Using table.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
27	Kammoun *et al.* (2014)	YES ========== Page 144	Can't answer ========== Not stated.	NO ========== Articles were found via computerised search of topics area. As researcher believe to be inefficient.	YES ========== Only grey literatures are being used.	NO ========== Exclusion study is not included. While inclusion was found based on referenced provided by author.	YES ========== Table 1 and 2.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Provide understanding on the category and subcategory applications environment, DES was being used. Table 2.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
28	Carey *et al.* (2015)	YES ========== Page 2	YES ========== More than 2 people conducted data searching.	YES ========== Articles were found in 10 academic databases and greay literatures (Page 2).	YES ========== Major national and international conferences articles.	YES ========== Presented in the discriptions and PRISMA diagram (figure 1, page 2)	YES ========== Table 1.	NO ========== The assessment of data quality (quality of practice) in the included studies was assessed (page 3). However, there were no indication of its rating or score for each	CAN'T ANSWER ========== Scored no for question 8.	YES ========== Pooled result using a table.	NO ========== Not being assessed.	YES ========== No source of funding were gained (page 7).

								studies.				
29	Atkinson *et al.* (2015)	YES ========== Page 1 (aim) and page 3.	Can't answer ========== Not stated.	YES ========== Articles were found in 4 academic databases and 1 grey literature (Page 3).	YES ========== Using Google scholar.	YES ========== Presented in the paper selction diagram (figure 1, page 4)	YES ========== Table 1.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result using a table.	YES ========== Page 5.	YES ========== NHMRC partnership centre grant scheme
30	Baru *et al.* (2015)	YES ========== Page 299	Can't answer ========== Not stated.	NO ========== Articles were found via 1 grey literature (Page 299).	YES ========== Using Google scholar.	NO ========== Excluded studies are not being presented.	YES ========== Table 1-3.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result using tables	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
31	Isern *et al.* (2015)	YES ========== Page 43	YES ========== "We" determine more than 2 people conducted data searching.	YES ========== Articles were found in 5 academic databases (Page 43-44).	NO ========== Not used.	NO ========== Excluded studies are not being presented.	YES ========== Table 1-6.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result using tables.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
32	Gul *et al.* (2015)	YES ========== Page 328	YES ========== "We" determine more than 2 people conducted data searching.	YES ========== Articles were found via various academic database and 1 grey literature (Page 329).	YES ========== Using winter simulation conference papers.	NO ========== Excluded studies are not being presented.	YES ========== Table 1-3.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result using table and charts.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
33	Vieira *et al.* (2016)	YES ========== Page 3-4	YES ========== "We" determine	YES ========== Articles were found in 5	YES ========== Using the Center for	NO ========== Excluded studies are	YES ========== Table 3-6.	NO ========== Quality assessment of	CAN'T ANSWER ========== Quality	YES ========== Pooled result using tables.	YES ========== Presented in the discussion	YES ========== ALORT project

			more than 2 people conducted data searching.	academic databases and 1 grey literature (Page 3).	Healthcare Operations Improvement and Research (CHOIR) database.	not being presented.		articles is not being evaluated.	assessment is not conducted.		in page 5.	
34	Mielczarek (2016)	YES ========== Page 60-61	Can't answer ========== Not stated.	YES ========== Articles were found 6 academic databases and 1 grey literature (Page 59).	YES ========== Using the Cambridge journal database.	NO ========== Excluded studies are not being presented.	NO ========== The list of refreences were not presented, but the number of studies were described in tables (e.g. figure 1).	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result using table and charts.	NO ========== Not being assessed.	YES ========== A grant by the grant Simulation Modeling of the Demand for Healthcare Services
35	Palmer *et al.* (2017)	YES ========== Page 2-4	YES ========== "We" determine more than 2 people conducted data searching.	YES ========== Articles were found in 3 academic databases (Page 3).	NO ========== Not used.	YES ========== Presented in the PRISMA diagram (figure 1, page 5)	YES ========== Table 4-6.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result using tables.	NO ========== Not being assessed.	Yes ========== Health foundation
36	Soh *et al.* (2017)	YES ========== Page 61	YES ========== "We" determine more than 2 people conducted data searching.	YES ========== Articles were found via various academic database and grey literature.	YES ========== Using Google scholar and winter simulation conference database.	NO ========== Excluded studies are not being presented.	YES ========== Table 3-6.	NO ========== Quality assessment of articles is not being evaluated.	CAN'T ANSWER ========== Quality assessment is not conducted.	YES ========== Pooled result using tables.	NO ========== Not being assessed.	NO ========== Source of funding is not displayed
37	Mohiuddin *et al.* (2017)	YES ========== Page 3	YES ========== 2 authors.	YES ========== Articles were found via various	YES ========== Using Google scholar.	YES ========== Presented in the PRISMA diagram	YES ========== Table 1-4.	YES ========== Assessed methodologic al quality of all	YES ========== In conclusion.	YES ========== Pooled result using tables.	NO ========== Not being assessed.	YES ========== NIHR

				academic databases and grey literature.		(figure 1, page 4)		included studies.				

AMSTAR score and quality rating criteria

AMSTAR Score	Quality Rating Criteria
0-4	LOW
5-8	MODERATE
9-11	HIGH

Quality assessment results using modified AMSTAR checklist
Included studies (N=37)

No.	Authors	State of articles quality using modified AMSTAR checklist
1	Klein *et al.* (1993)	MODERATE
2	Fone *et al.* (2003)	MODERATE
3	White (2005)	MODERATE
4	Hoot *et al.* (2008)	HIGH
5	Sobolev *et al.* (2009)	MODERATE
6	Jack *et al.* (2009)	MODERATE
7	Brailsford *et al.* (2009)	MODERATE
8	Mielczarek *et al.* (2010)	MODERATE
9	Paul *et al.* (2010)	MODERATE
10	Mustafee *et al.* (2010)	MODERATE
11	Cardoen *et al.* (2010)	MODERATE
12	Katsaliaki *et al.* (2010)	MODERATE
13	Guerriero *et al.* (2010)	LOW
14	Günal *et al.* (2010)	MODERATE
15	Van Sambeek *et al.* (2010)	MODERATE
16	Fakhimi *et al.* (2012)	LOW
17	Hulshof *et al.* (2012)	MODERATE
18	Van Lent *et al.* (2012)	MODERATE
19	Belien *et al.* (2012)	MODERATE
20	Aboueljinane *et al.* (2013)	MODERATE
21	Fakhimi *et al.* (2013)	MODERATE
22	Timbie *et al.* (2013)	HIGH
23	Pomey *et al.* (2013)	MODERATE
24	Verbano *et al.* (2013)	MODERATE
25	Lakshmi *et al.* (2013)	MODERATE
26	Mahdavi *et al.* (2013)	MODERATE
27	Kammoun *et al.* (2014)	LOW
28	Carey *et al.* (2015)	MODERATE
29	Atkinson *et al.* (2015)	MODERATE
30	Baru *et al.* (2015)	LOW
31	Isern *et al.* (2015)	MODERATE
32	Gul *et al.* (2015)	MODERATE
33	Vieira *et al.* (2016)	MODERATE
34	Mielczarek (2016)	MODERATE
35	Palmer *et al.* (2017)	MODERATE
36	Soh *et al.* (2017)	MODERATE
37	Mohiuddin *et al.* (2017)	HIGH

Extra: Uploaded articles (i.e. included and excluded)
Download link