**Supplementary Online Content**

**eFigure.** Study Selection Flowchart ……...……………………………………………………………………………….p. 2

**eAppendix.** Search Strategy ……………...……………………………………………………………………………….p. 3

**eFigure: Study Selection Flowchart**

1 Article identified by hand

 searching reference lists

8 Articles included in the review

 5 Articles for diagnostic accuracy of sepsis

 5 Articles for evaluation of the effectiveness of

alerts on sepsis-related outcomes

-

99 Articles excluded on the basis of abstract review

1110 Articles excluded on the basis of title review

84 Articles identified for full-text review

183 Articles identified for abstract review

1,293 Potentially relevant articles identified and screened for review

77 Articles excluded

 44 Abstracts only

 9 No original data

 6 Not real-time

 9 Did not evaluate diagnostic accuracy or the

 effectiveness of automated, early warning systems

 1 No control group

 4 Not focused on sepsis

 2 English translation unavailable

 1 Sepsis alert system changed mid-evaluation

**eAppendix: Search Strategy**

Databases Citation Counts Dates of coverage

PubMed (NLM) 547 1946+

Embase (Elsevier) 791 1947+

CINAHL Plus Full Text (EBSCO) 44 1937+

The Cochrane Library (Wiley) 49 \*See notes

\*Dates of coverage:

Cochrane Database of Systematic Reviews: Issue 6 of 12, June 2014

## Cochrane Central Register of Controlled Trials (Central): Issue **5 of 12, May 2014**

[Methods Studies](http://onlinelibrary.wiley.com/o/cochrane/cochrane_clcmr_articles_fs.html):  **Issue 3 of 4, July 2012**

[Technology Assessments](http://onlinelibrary.wiley.com/o/cochrane/cochrane_clhta_articles_fs.html): **Issue 2 of 4, April 2014**

**Other Reviews (DARE): Issue 2 of 4, April 2014**

**PubMed MEDLINE (run date June 27, 2014)**

| Search | Add to builder | Query | Items found |
| --- | --- | --- | --- |
| [#](http://www.ncbi.nlm.nih.gov/pubmed/advanced)6 | [Add](http://www.ncbi.nlm.nih.gov/pubmed/advanced) | Search (#5 AND #6 AND #7) NOT (animals[mh] NOT humans[mh]) NOT (adolescent[mh] OR child[mh] OR fetus[mh] OR infant[mh] OR newborn[mh] OR adolescen\*[tiab] OR child\*[tiab] OR fetal[tiab] OR fetus[tiab] OR infan\*[tiab] OR neonat\*[tiab] OR pediatr\*[tiab] OR paediatr\*[tiab] OR perinatal[tiab] NOT (adults[mh] OR adult\*[tiab]))  | [547](http://www.ncbi.nlm.nih.gov/pubmed/?cmd=HistorySearch&querykey=9) |
| [#](http://www.ncbi.nlm.nih.gov/pubmed/advanced)5 | [Add](http://www.ncbi.nlm.nih.gov/pubmed/advanced) | Search (#5 AND #6 AND #7) NOT (animals[mh] NOT humans[mh])  | [653](http://www.ncbi.nlm.nih.gov/pubmed/?cmd=HistorySearch&querykey=10) |
| [#](http://www.ncbi.nlm.nih.gov/pubmed/advanced)4 | [Add](http://www.ncbi.nlm.nih.gov/pubmed/advanced) | Search (#5 AND #6 AND #7)  | [671](http://www.ncbi.nlm.nih.gov/pubmed/?cmd=HistorySearch&querykey=8) |
| [#](http://www.ncbi.nlm.nih.gov/pubmed/advanced)3 | [Add](http://www.ncbi.nlm.nih.gov/pubmed/advanced) | Search alarm[tiab] OR alarms[tiab] OR alert[tiab] OR alerting[tiab] OR alerts[tiab] OR algorithm[tw] OR algorithms[tw] OR clinical alarms[mh] OR detection[tiab] OR early diagnosis[tw] OR monitoring, physiologic[mh:noexp] OR monitor\*[tiab] OR recognition[tiab] OR screening[tiab] OR surveillance[tiab] OR warning[tiab] OR model\*[tiab] OR predict\*[tiab] OR risk[mh] OR risk[tiab]  | [5065370](http://www.ncbi.nlm.nih.gov/pubmed/?cmd=HistorySearch&querykey=7) |
| [#](http://www.ncbi.nlm.nih.gov/pubmed/advanced)2 | [Add](http://www.ncbi.nlm.nih.gov/pubmed/advanced) | Search electronic health records[mh] OR information systems[mh:noexp] OR automation[mh] OR clinical laboratory information systems[mh] OR decision support systems, clinical[mh] OR diagnosis, computer-assisted[mh] OR health information systems[mh] OR hospital information systems[mh] OR management information systems[mh] OR medical records systems, computerized[mh] OR reminder systems[mh] OR electronic[tiab] OR computerized[tiab]  | [318037](http://www.ncbi.nlm.nih.gov/pubmed/?cmd=HistorySearch&querykey=6) |
| [#](http://www.ncbi.nlm.nih.gov/pubmed/advanced)1 | [Add](http://www.ncbi.nlm.nih.gov/pubmed/advanced) | Search sepsis OR systemic inflammatory response syndrome OR "septic shock"  | [138775](http://www.ncbi.nlm.nih.gov/pubmed/?cmd=HistorySearch&querykey=5) |

**Cut & paste version:**

(sepsis OR systemic inflammatory response syndrome OR "septic shock") AND (electronic health records[mh] OR information systems[mh:noexp] OR automation[mh] OR clinical laboratory information systems[mh] OR decision support systems, clinical[mh] OR diagnosis, computer-assisted[mh] OR health information systems[mh] OR hospital information systems[mh] OR management information systems[mh] OR medical records systems, computerized[mh] OR reminder systems[mh] OR electronic[tiab] OR computerized[tiab]) AND (alarm[tiab] OR alarms[tiab] OR alert[tiab] OR alerting[tiab] OR alerts[tiab] OR algorithm[tw] OR algorithms[tw] OR clinical alarms[mh] OR detection[tiab] OR early diagnosis[tw] OR monitoring, physiologic[mh:noexp] OR monitor[tiab] OR monitored[tiab] OR monitoring[tiab] OR monitors[tiab] OR recognition[tiab] OR screening[tiab] OR surveillance[tiab] OR warning[tiab] OR model\*[tiab] OR predict\*[tiab] OR risk[mh] OR risk[tiab]) NOT (animals[mh] NOT humans[mh]) NOT (adolescent[mh] OR child[mh] OR fetus[mh] OR infant[mh] OR newborn[mh] OR adolescen\*[tiab] OR child\*[tiab] OR fetal[tiab] OR fetus[tiab] OR infan\*[tiab] OR neonat\*[tiab] OR pediatr\*[tiab] OR paediatr\*[tiab] OR perinatal[tiab] NOT (adults[mh] OR adult\*[tiab]))

# Embase (run date June 27, 2014)

| **No.** | **Query** | **Results** |
| --- | --- | --- |
| #6  | #1 AND #2 AND #3 NOT ([animals]/lim NOT ([humans]/lim OR 'patient'/exp)) NOT ([adolescent]/lim OR [child]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR adolescen\*:ab,ti OR child\*:ab,ti OR fetal:ab,ti OR fetus:ab,ti OR infan\*:ab,ti OR neonat\*:ab,ti OR pediatr\*:ab,ti OR paediatr\*:ab,ti OR perinatal:ab,ti NOT adult\*) | 791 |
| #5  | #1 AND #2 AND #3 NOT ([animals]/lim NOT ([humans]/lim OR 'patient'/exp)) | 957 |
| #4  | #1 AND #2 AND #3 | 977 |
| #3  | alarm:ab,ti OR alarms:ab,ti OR 'alarm monitor'/de OR 'alarm monitoring'/de OR alert:ab,ti OR alerts:ab,ti OR alerting:ab,ti OR 'algorithm'/exp OR algorithm:ab,ti OR algorithms:ab,ti OR detection:ab,ti OR 'early diagnosis'/de OR 'early diagnosis':ab,ti OR 'monitor'/de OR 'monitoring'/de OR monitor\*:ab,ti OR 'patient monitor'/de OR 'personal monitor'/de OR 'physiologic monitoring'/de OR recognition:ab,ti OR screening:ab,ti OR surveillance:ab,ti OR warning:ab,ti OR model\*:ab,ti OR predict\*:ab,ti OR 'risk'/exp OR risk:ab,ti | 6199198 |
| #2  | 'electronic medical record'/exp OR 'information system'/de OR 'automation'/exp OR 'clinical data repository'/de OR 'computer assisted diagnosis'/de OR 'decision support system'/de OR 'expert system'/de OR 'hospital information system'/de OR 'medical information system'/de OR 'online system'/de OR 'performance measurement system'/exp OR 'reminder system'/de OR electronic:ab,ti OR computerized:ab,ti | 373692 |
| #1  | sepsis OR 'systemic inflammatory response syndrome' OR 'septic shock' | 162518 |

**Cut and paste version:**

sepsis OR 'systemic inflammatory response syndrome' OR 'septic shock' AND ('electronic medical record'/exp OR 'information system'/de OR 'automation'/exp OR 'clinical data repository'/de OR 'computer assisted diagnosis'/de OR 'decision support system'/de OR 'expert system'/de OR 'hospital information system'/de OR 'medical information system'/de OR 'online system'/de OR 'performance measurement system'/exp OR 'reminder system'/de OR electronic:ab,ti OR computerized:ab,ti) AND (alarm:ab,ti OR alarms:ab,ti OR 'alarm monitor'/de OR 'alarm monitoring'/de OR alert:ab,ti OR alerts:ab,ti OR alerting:ab,ti OR 'algorithm'/exp OR algorithm:ab,ti OR algorithms:ab,ti OR detection:ab,ti OR 'early diagnosis'/de OR 'early diagnosis':ab,ti OR 'monitor'/de OR 'monitoring'/de OR monitor\*:ab,ti OR 'patient monitor'/de OR 'personal monitor'/de OR 'physiologic monitoring'/de OR recognition:ab,ti OR screening:ab,ti OR surveillance:ab,ti OR warning:ab,ti OR model\*:ab,ti OR predict\*:ab,ti OR 'risk'/exp OR risk:ab,ti) NOT ([animals]/lim NOT ([humans]/lim OR 'patient'/exp)) NOT ([adolescent]/lim OR [child]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR adolescen\*:ab,ti OR child\*:ab,ti OR fetal:ab,ti OR fetus:ab,ti OR infan\*:ab,ti OR neonat\*:ab,ti OR pediatr\*:ab,ti OR paediatr\*:ab,ti OR perinatal:ab,ti NOT adult\*)

**CINAHL Plus with Full Text (run date June 27, 2014)**

|  |  |  |  |
| --- | --- | --- | --- |
| **#**  | **Query**  | **Limiters/Expanders**  | **Results**  |
| S7  | (S6 NOT s7 ) NOT ( (adolescen\* OR child\* OR fetus OR fetal OR infant OR neonat\* OR newborn\* OR pediatr\* OR paediatr\* OR perinatal) NOT (adult\*) )  | Search modes - Boolean/Phrase  | **44**  |
| S6  | S3 AND S4 AND S5  | Search modes - Boolean/Phrase  | 52  |
| S5  | ti alarm OR ab alarm OR ti alarms OR ab alarms OR ti alert OR ab alert OR ti alerting OR ab alerting OR ti alerts OR ab alerts OR MH “algorithms” OR ti algorithm OR ab algorithm OR ti algorithms OR ab algorithms OR ti detection OR ab detection OR MH “early diagnosis” OR ti “early diagnosis” OR ab “early diagnosis” OR MH “equipment alarm systems” OR MH “monitoring, physiologic” OR ti monitor\* OR ab monitor\* OR ti recognition OR ab recognition OR ti screening OR ab screening OR ti surveillance OR ab surveillance OR ti warning OR ab warning OR ti model\* OR ab model\* OR ti predict\* OR ab predict\* OR ti risk OR ab risk | Search modes - Boolean/Phrase  | 293,382  |
| S4  | MH “Computerized Patient Record” OR MH “Information Systems” OR MH “Automation+” OR MH “Clinical Laboratory Information Systems” OR MH “Decision Support Systems, Clinical” OR MH “Diagnosis, Computer-Assisted+” OR MH “Health Information Systems+” OR MH “Hospital Information Systems+” OR MH “Management Information Systems+” OR MH “Reminder Systems” OR ti electronic OR ab electronic OR ti computerized OR ab computerized | Search modes - Boolean/Phrase  | 53,900  |
| S3  | S1 OR S2  | Search modes - Boolean/Phrase  | 18,500  |
| S2  | MH "Sepsis+" OR MH "Systemic Inflammatory Response Syndrome+" OR MH "Shock, Septic"  | Search modes - Boolean/Phrase  | 14,847  |
| S1  | sepsis OR "systemic inflammatory response syndrome" OR "septic shock"  | Search modes - Boolean/Phrase  | 14,371  |

**The Cochrane Library (run date June 27, 2014)**

**ID Search Hits**

#1 sepsis or "systemic inflammatory response syndrome" or "septic shock":ti,ab,kw and electronic\* or "information system" or "information systems" or computer\* or reminder\* or automation:ti,ab,kw and alarm\* or algorithm\* or monitor\* or "early diagnosis" or screen\* or recognition or surveillance or detection or alert\* or warn\* or risk or model\* or predict\*:ti,ab,kw (Word variations have been searched) 46

#2 MeSH descriptor: [Medical Records Systems, Computerized] explode all trees 402

#3 MeSH descriptor: [Information Systems] explode all trees 2735

#4 MeSH descriptor: [Diagnosis, Computer-Assisted] explode all trees 1597

#5 MeSH descriptor: [Automation] explode all trees 733

#6 #2 or #3 or #4 or #5 5083

#7 MeSH descriptor: [Algorithms] explode all trees 2994

#8 MeSH descriptor: [Clinical Alarms] explode all trees 21

#9 MeSH descriptor: [Monitoring, Physiologic] explode all trees 9137

#10 MeSH descriptor: [Early Diagnosis] explode all trees 938

#11 MeSH descriptor: [Risk] explode all trees 30607

#12 #7 or #8 or #9 or #10 or #11 42393

#13 MeSH descriptor: [Systemic Inflammatory Response Syndrome] explode all trees 3288

#14 #13 and #6 and #12 4

#15 #1 or #14 **49**

All Results (49): Cochrane Reviews (12) Other Reviews (1) Trials (34) Methods Studies (1) Technology Assessments (1) Economic Evaluations (0) Cochrane Groups (0)