

## APPENDIX 1: Expert librarian search strategy

### surveillance MEDLINE

1. inpatient\*.mp. or exp cross infection/bl, di, mi, ep, pc or pneumonia, ventilator-related.mp. or bacteremia/ or urinary tract infections/ or catheter-related infections/  
[mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
2. exp hospitals/ or exp infection control/ or hospitalization/ or nosocomial\*.mp. or exp intensive care units/ or exp critical care/ [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
3. hospital information systems/ or hospital systems/
4. or/1-3
5. database management systems/ or medical record systems, computerized/ or automatic data processing/ or medical informatics/ or pattern recognition, automated/ or cluster analysis/ or algorithms/
6. ((automat\* or electronic\* or syndrom\* or computer\*) and (surveill\* or screen\*)).mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
7. 4 and 5 and 6
8. 4 and 5 and (exp infection/di, ep, pc or exp virus diseases/di, ep, pc or bacterial infections/di, ep, pc)
9. 6 and 8
10. 8 and (disease notification/ or disease surveillance/ or sentinel surveillance/ or population surveillance/)
11. 7 or 9 or 10
12. 6 and (disease notification/ or disease surveillance/ or sentinel surveillance/ or population surveillance/) and (1 or 2 or exp infection/di, ep, pc or exp virus diseases/di, ep, pc or bacterial infections/di, ep, pc)
13. (1 or 2 or hospital\*.mp.) and 12 [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]
14. 11 or 13
15. ../ 14 lg=en
16. (outcome\* or evaluat\* or valid\* or perform\*).mp. or comparative study.pt. or predictive value of tests/ or "sensitivity and specificity"/ [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]

17. exp diagnostic errors/ or (positive adj predictive).mp. or (negative adj predictive).mp. or (gold adj standard).mp. or (manual adj2 (review\* or regist\*)).mp. or accuracy.mp. or missed.mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]

18. 15 and (16 or 17)

19. 15 and (cohort\* or prospective\* or retrospective\*).mp. [mp=protocol supplementary concept, rare disease supplementary concept, title, original title, abstract, name of substance word, subject heading word, unique identifier]

20. limit 15 to (clinical trial, all or clinical trial, phase i or clinical trial, phase ii or clinical trial, phase iii or clinical trial, phase iv or clinical trial or comparative study or controlled clinical trial or evaluation studies or meta analysis or multicenter study or randomized controlled trial or validation studies)

21. 18 or 19 or 20

### **surveillance EMBASE**

1. critical illness/ or intensive care unit/ or critically ill patient/ or critical care/

2. artificial intelligence/ or automated pattern recognition/ or computer assisted diagnosis/ or decision support system/ or natural language processing/ or reminder system/ or automatic data processing.mp. or medical records system/ or electronic surveillance system/ or medical records, system, computerized/ or electronic health record/ or electronic medical record/ [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer]

3. ((computer\* or automat\* or electronic\* or syndrom\*) adj5 (surveill\* or screen\* or detect\* or alert\* or trigger\* or marker\*)).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer]

4. 1 and (2 or 3)

5. "sensitivity and specificity"/ or (sensitiv\* and specific\*).mp. or (diagnostic adj2 performance).mp. or diagnostic accuracy/ or diagnostic value/ or (positive adj2 predict\*).mp. or (negative adj2 predict\*).mp. or early diagnosis/ [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer]

6. 4 and 5

7. 1 and algorithm/ and monitoring/

8. cohort analysis/ or (real adj time).mp. or (manual adj review\*).mp. or (chart adj review\*).mp. or (gold adj standard).mp. or validat\*.mp. or reproducibility/ [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer]

9. 4 and 8

10. 6 or 7 or 9

11. limit 10 to english language

12. (\*critical illness/ or \*intensive care unit/ or \*critically ill patient/ or \*critical care/ or (\*artificial intelligence/ or \*automated pattern recognition/ or \*computer assisted diagnosis/ or \*decision support system/ or \*natural language processing/ or \*reminder system/ or \*automatic data processing/ or \*medical records system/ or \*electronic surveillance system/ or \*medical records, system, computerized/ or \*electronic health record/ or \*electronic medical record/) or 3) and 11

## **CINAHL**

# Query Limiters/Expanders Last Run Via Results Action

S19 S15 or S16 or S18 Search modes - Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 125 Edit S19

S18 S7 and S17 Search modes - Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 4 Edit S18

S17 TX "positive predict\*" OR "negative predict\*" Search modes -

Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 3356 Edit S17

S16 S7 and S14 Search modes - Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 14 Edit S16

S15 S12 and S14 Search modes - Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 124 Edit S15

S14 (MH "predictive value of tests") OR (MH "sensitivity and specificity")

Search modes - Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 29130 Edit S14

S13 (MH "predictive value of tests") OR (MH "sensitivity and specificity")

OR (TX "predict\*" Search modes - Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 0 Edit S13

S12 S6 and S11 Search modes - Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 2613 Edit S12

S11 S8 or S9 Search modes - Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 38787 Edit S11

S10 S8 or S9 Search modes - Boolean/Phrase Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 38787 Edit S10

S9 (MH "Infection Control+") OR (MH "Infection Control (Saba CCC)+") OR

(MH "Infection Control (Iowa NIC)") Search modes - Boolean/Phrase

Interface - EBSCOhost

Search Screen - Advanced Search

Database - CINAHL 30558 Edit S9  
S8 (MH "Cross Infection+") OR (MH "Catheter-Related Infections") Search  
modes - Boolean/Phrase Interface - EBSCOhost  
Search Screen - Advanced Search  
Database - CINAHL 14756 Edit S8  
S7 S3 and S6 Search modes - Boolean/Phrase Interface - EBSCOhost  
Search Screen - Advanced Search  
Database - CINAHL 178 Edit S7  
S6 S4 or S5 Search modes - Boolean/Phrase Interface - EBSCOhost  
Search Screen - Advanced Search  
Database - CINAHL 116661 Edit S6  
S5 (MH "algorithms") OR (MH "diagnostic reasoning") OR (MH "decision  
making, computer assisted") Search modes - Boolean/Phrase Interface -  
EBSCOhost  
Search Screen - Advanced Search  
Database - CINAHL 7186 Edit S5  
S4 (MH "Data Analysis, Computer Assisted") OR (MH "Data Analysis  
Software+") Search modes - Boolean/Phrase Interface - EBSCOhost  
Search Screen - Advanced Search  
Database - CINAHL 110050 Edit S4  
S3 S1 and S2 Search modes - Boolean/Phrase Interface - EBSCOhost  
Search Screen - Advanced Search  
Database - CINAHL 462 Edit S3  
S2 (MH "critical care+") OR (MH "critical care nursing+") OR (MH  
"intensive care units+") Search modes - Boolean/Phrase Interface -  
EBSCOhost  
Search Screen - Advanced Search  
Database - CINAHL 31610 Edit S2

## SCOPUS

(TITLE-ABS-KEY(("critical care" OR "intensive care") AND ("sentinel surveillance" OR "syndromic surveillance")) AND LANGUAGE(english))

(TITLE-ABS-KEY(("critical care" OR "intensive care")) AND TITLE-ABS-KEY(("reminder systems" OR "automatic data processing" OR "computer-assisted" OR  
"decision support" OR "hospital information system" OR "automatic harm detection" OR automated OR electronic\* OR computer\* OR algorithm\*)) AND TITLE-ABS-  
KEY(detect\* OR alert\* OR alarm\* OR monitor\* OR surveill\* OR trigger\* OR sniff\* OR "early diagnosis" OR septic\* OR bacter\* OR nosocomial\* OR infect\* OR  
pneumonia\*) AND TITLE-ABS-KEY(performance OR accuracy OR accurate OR early OR rapid OR predict\* OR sensitiv\* OR specific\* OR compar\* OR days OR  
"gold standard" OR manual\* OR missed) AND TITLE(automat\* OR system\* OR electron\* OR computer\* OR alert\* OR alarm\* OR monitor\* OR surveill\*)) AND NOT  
(PMID(1\* OR 2\* OR 3\* OR 4\* OR 5\* OR 6\* OR 7\* OR 8\* OR 9\*))

## IEEE

“critical care” OR “intensive care”