

**Supplementary Material 1** Search strategies used in the Embase, Medline and Pubmed databases (30.11.2016)

1. EMBASE 1974 to 2016 November 29<sup>th</sup>;
2. Exp intensive care/
3. Intensive care.mp.
4. Critical care.mp.
5. Exp intensive care unit/
6. Critical illness.mp. or critical illness/
7. High dependency unit.mp.
8. Burn unit.mp. or burn unit/
9. Exp coronary care unit/
10. Coronary care unit.mp.
11. Exp recovery room/
12. recovery room.mp.
13. respiratory care unit.mp.
14. critical\* ill\*.mp.
15. ICU.mp.
16. HDU.mp.
17. Intensive care unit.mp.
18. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16
19. Exp physiotherapy/
20. Physical therap\*.mp.
21. physiotherapy\*.mp.
22. Respiratory therap\*.mp.
23. 18 or 19 or 20 or 21
24. Evaluation study/
25. hospitalization/
26. \*hospital personnel management/
27. Weekend.mp.
28. on call.mp.
29. saturday.mp.
30. sunday.mp.
31. evening.mp.
32. night.mp. or exp night work/
33. 24 hours.mp.
34. 24-hour.mp.
35. out of hours.mp.
36. 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34
37. 17 and 22 and 35

**2. OVID Medline In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R) 1946 to 2016 November 29th:**

1. Intensive care unit.mp.
2. Intensive care units.mp. or Intensive Care Units/
3. Burn units.mp. or Burn Units/
4. Coronary care units.mp. or Coronary Care Units/
5. Respiratory care units.mp. or Respiratory Care Units/
6. Critical illness.mp. or Critical Illness/
7. Intensive treatment unit.mp.
8. High dependency unit.mp.
9. ICU.mp.
10. HDU.mp.
11. \*Intensive Care/
12. Intensive care.mp.
13. Critical Care/
14. Critical care.mp.
15. \*Critical Care/mt [Methods]
16. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15
17. Physical therapy modalities.mp. or Physical Therapy Modalities/
18. Physical Therapy Specialty/
19. Physical therap\*.mp.
20. physiotherapy\*.mp.
21. Respiratory Therapy/
22. Respiratory Therapy/mt [Methods]
23. Respiratory therap\*.mp.
24. 17 or 18 or 19 or 20 or 21 or 22 or 23
25. \*"Personnel Staffing and Scheduling"/
26. weekend.mp.
27. on call.mp.
28. saturday.mp.
29. sunday.mp.
30. evening.mp.
31. night.mp.
32. 24 hours.mp.
33. 24-hour.mp.
34. evaluation studies/
35. exp Hospitalization/sn [Statistics & Numerical Data]
36. Time Factors/
37. 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36
38. 16 and 24 and 37

**3. Pubmed.**

- #21 #12 AND #16 AND #20
- #20 #18 OR #19
- #19 "hospitalization/statistics and numerical data"[MeSH Terms] OR "time factors"[MeSH Terms] OR "evaluation studies"[MeSH Terms] OR weekend[Title/Abstract] OR "on call"[Title/Abstract] OR saturday[Title/Abstract] OR sunday[Title/Abstract] OR evening[Title/Abstract] OR night[Title/Abstract] OR "24 hours"[Title/Abstract] OR 24-hour[Title/Abstract] OR "out of hours"[Title/Abstract]
- #18 personnel staffing and scheduling[MeSH Terms]
- #16 #13 OR #14 OR #15
- #15 "respiratory therapy/methods"[MeSH Terms] OR "physical therap\*"[Title/Abstract] OR physiotherap\*[Title/Abstract] OR "respiratory therap\*"[Title/Abstract]
- #14 "physical therapy modalities" [MeSH Terms] OR "physical therapy specialty"[MeSH Terms] OR respiratory therapy[MeSH Terms]
- #13 respiratory therapy[MeSH Terms]
- #12 #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11

- #11 "intensive care" [MeSH Terms] OR "intensive care" [Title/Abstract]
- #10 ICU[Title/Abstract] OR HDU[Title/Abstract]
- #9 "high dependency unit"[Title/Abstract]
- #8 "intensive treatment unit"[Title/Abstract]
- #7 "critical care"[MeSH Terms] OR "critical care/methods"[MeSH Terms]
- #6 "critical illness"[Title/Abstract] OR "critical illness"[MeSH Terms]
- #5 respiratory care units"[Title/Abstract] OR "respiratory care units"[MeSH Terms]
- #4 "recovery room"[Title/Abstract] OR "recovery room"[MeSH Terms]
- #3 "coronary care units"[Title/Abstract] OR "coronary care units"[MeSH Terms]
- #2 "burn units"[Title/Abstract] OR "burn units"[MeSH Terms]
- #1 "intensive care units"[Title/Abstract] OR "intensive care units"[MeSH Terms]

**Supplementary material 2** Check list PRISMA (Equator Network).

| Section/topic                      | #  | Checklist item  | Reported on page #                 |
|------------------------------------|----|---|------------------------------------|
| <b>Title</b>                       |    |   |                                    |
| Title                              | 1  | Identify the report as a systematic review, meta-analysis, or both.   | 1                                  |
| <b>Abstract</b>                    |    |   |                                    |
| Structured summary                 | 2  | Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number. | 2                                  |
| <b>Introduction</b>                |    |   |                                    |
| Rationale                          | 3  | Describe the rationale for the review in the context of what is already known.  | 2                                  |
| Objectives                         | 4  | Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).  | 3                                  |
| <b>Methods</b>                     |    |   |                                    |
| Protocol and registration          | 5  | Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.   | 3                                  |
| Eligibility criteria               | 6  | Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.  | 3, 8                               |
| Information sources                | 7  | Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.  | 3                                  |
| Search                             | 8  | Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.   | 3,14<br>(Supplementary Material 1) |
| Study selection                    | 9  | State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).   | 3                                  |
| Data collection process            | 10 | Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.  | 3                                  |
| Data items                         | 11 | List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.   | 4                                  |
| Risk of bias in individual studies | 12 | Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.  | 3                                  |

|                               |    |  |     |
|-------------------------------|----|--|-----|
| Summary measures              | 13 | State the principal summary measures (e.g., risk ratio, difference in means).  | 4   |
| Synthesis of results          | 14 | Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I <sup>2</sup> ) for each meta-analysis.                                       | 4   |
| Risk of bias across studies   | 15 | Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).   | 4   |
| Additional analyses           | 16 | Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.   | 4   |
| <b>Results</b>                |    |  |     |
| Study selection               | 17 | Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.  | 4   |
| Study characteristics         | 18 | For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.   | 4   |
| Risk of bias within studies   | 19 | Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).  | 5   |
| Results of individual studies | 20 | For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot. | 5   |
| Synthesis of results          | 21 | Present results of each meta-analysis done, including confidence intervals and measures of consistency.  | n/a |
| Risk of bias across studies   | 22 | Present results of any assessment of risk of bias across studies (see Item 15).  | 5   |
| Additional analysis           | 23 | Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).  | 5   |
| <b>Discussion</b>             |    |  |     |
| Summary of evidence           | 24 | Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).                     | 5   |
| Limitations                   | 25 | Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).  | 6   |
| Conclusions                   | 26 | Provide a general interpretation of the results in the context of other evidence, and implications for future research.  | 7   |
| <b>Funding</b>                |    |  |     |
| Funding                       | 27 | Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.   | 7   |