Supplementry Material A

Database
OVID Medline E-pub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily, and Ovid MEDLINE(R) 1946 to Present

Search Strategy
1. newborn.mp. or Infant, Newborn/ (709559)
2. neonate.mp. (26999)
3. infant.mp. or Infant/ (1129454)
4. infant/C3.mp. (1212105)
5. neonat/C3.mp. (269189)
6. randomized.mp. (761690)
7. clinical trial.mp. or Clinical Trial/ (668568)
8. trial.mp. (1090763)
9. randomly.mp. (300885)
10. randomized controlled trial.mp. or Randomized Controlled Trial/ (493005)
11. controlled clinical trial.mp. or Controlled Clinical Trial/ (104972)
12. Intubation, Intratracheal/ or endotracheal tube.mp. (37125)
13. tracheal tube.mp. (2299)
14. ETT.mp. (4560)
15. tip.mp. (63760)
16. depth.mp. (176701)
17. length.mp. (624095)
18. insertion.mp. (138389)
19. placement.mp. (115763)
20. position.mp. (372771)
21. orotracheal tube.mp. (142)
22. nasotracheal tube.mp. (216)
23. 1 or 2 or 3 or 4 or 5 (1399825)
24. 6 or 7 or 8 or 9 or 10 or 11 (1457893)
25. 12 or 13 or 14 or 21 or 22 (41581)
26. 15 or 16 or 17 or 18 or 19 or 20 (1393856)
27. 23 and 24 and 25 and 26 (188)

Database
Embase <1974 to November 11, 2018>

Search Strategy
1. newborn/ (489417)
2. neonate.mp. (38984)
3. newborn.mp. (585944)
4. infant/ (537553)
5. infant.mp. (656975)
6. infan’.mp. (824350)
7. neonat’.mp. (323722)
8. randomized.mp. (974511)
9. clinical trial/ (950957)
10. clinical trial.mp. (1440912)
11. trial.mp. or "clinical trial (topic)"/ (1916566)
12. randomly.mp. (392945)
13. randomized controlled trial/ (522152)
14. randomized controlled trial.mp. (685017)
15. controlled clinical trial.mp. or controlled clinical trial/ (476770)
16. endotracheal tube.mp. or endotracheal tube/ (19937)
17. ETT.mp. (4595)
18. nasotracheal tube.mp. or nasotracheal tube/ (426)
19. orotracheal tube.mp. (198)
20. tip.mp. (78694)
21. depth.mp. (267188)
22. insertion.mp. (184510)
23. length/ or length.mp. (788020)
24. placement.mp. (161632)
25. position.mp. or position/ (455930)
26. 1 or 2 or 3 or 4 or 5 or 6 or 7 (1237988)
27. 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 (2319567)
28. tracheal tube.mp. (3006)
29. 16 or 17 or 18 or 19 or 28 (24419)
30. 20 or 21 or 22 or 23 or 24 or 25 (1796788)
31. 26 and 27 and 29 and 30 (143)

Search Name: ETT tip Nov 11
Date Run: 11/11/2018 13:46:05
Comment:
ID Search Hits
#1 MeSH descriptor: [Infant, Newborn] this term only 14652
#2 (newborn):ti,ab,kw (Word variations have been searched) 22231
#3 (neonate):ti,ab,kw (Word variations have been searched) 15813
#4 (infant):ti,ab,kw (Word variations have been searched) 48745
#5 MeSH descriptor: [Infant] this term only 476
#6 (“randomised clinical trial”:ti,ab,kw OR “randomized controlled trial”:ti,ab,kw OR (randomly):ti,ab,kw OR (clinical trial):ti,ab,kw OR (controlled trial):ti,ab,kw (Word variations have been searched) 823563
#7 MeSH descriptor: [Randomized Controlled Trial] this term only 137
#8 MeSH descriptor: [Clinical Trial] this term only 35
#9 MeSH descriptor: [Controlled Clinical Trial] this term only 34
#10 (“endotracheal tube”:ti,ab,kw OR [ETT]:ti,ab,kw OR (“tracheal tube”:ti,ab,kw OR (“orotracheal tube”:ti,ab,kw OR (nasotracheal tube):ti,ab,kw (Word variations have been searched) 2567
#11 (“TIP”:ti,ab,kw OR (placement”:ti,ab,kw OR (“position”:ti,ab,kw OR (insertion):ti,ab,kw OR (depth):ti,ab,kw (Word variations have been searched) 148898
#12 (length):ti,ab,kw (Word variations have been searched) 36294
#13 #1 OR #2 OR #3 OR #4 OR #5 56780
#14 #6 OR #7 OR #8 OR #9 823563

American Journal of Perinatology

Endotracheal Tube Tip Insertion Depth Estimation
Razak, Faden
Database

CINAHL
Date searched: November 11, 2018

Search Strategy

| S25 | S21 AND S22 AND S23 AND S24 | 25 |
| S24 | S15 OR S16 OR S17 OR S18 OR S19 OR S20 | 219,904 |
| S23 | S10 OR S11 OR S12 OR S13 OR S14 | 3,659 |
| S22 | S6 OR S7 OR S8 OR S9 | 325,579 |
| S21 | S1 OR S2 OR S3 OR S4 OR S5 | 377,649 |
| S20 | "length" | 90,315 |
| S19 | "position" | 51,617 |
| S18 | "placement" | 33,142 |
| S17 | "insertion" | 16,374 |
| S16 | "depth" | 36,099 |
| S15 | "tip" | 7,671 |
| S14 | "tracheal tube" | 643 |
| S13 | "orotracheal tube" | 33 |
| S12 | "nasotracheal tube" | 34 |
| S11 | "ett" | 600 |
| S10 | endotracheal tube | 2,820 |
| S9 | "randomly" OR (MH "Random Assignment") | Display |
| S8 | (MH "Clinical Trials") OR "clinical trials" | Display |
| S7 | "controlled clinical trial" | Display |
| S6 | (MH "Randomized Controlled Trials") OR "randomized controlled trials" | Display |
| S5 | "neonat"* | Display |
| S4 | "infant"* | Display |
| S3 | (MH "Infant") OR "infant" | Display |
| S2 | "neonate" | Display |
| S1 | "newborn" OR (MH "Infant, Newborn") | Display |

Primary Outcome
1. Optimal placement of endotracheal tube (ETT) tip identified on chest X-ray (CXR) after intubation (optimal placement defined by the study authors).

Secondary Outcomes
1. Need for ETT adjustment after CXR
2. Occurrence of air leaks (pneumothorax, pneumopericardium, or pulmonary interstitial emphysema)
3. Oxygen or positive pressure support (nasal continuous positive airway pressure or high flow) at 36 weeks gestational age (GA).

STEP 3: Studies included if any of the methods used for ETT depth insertion in one of the study arm
1. Weight-based nomogram or method¹
2. GA-based nomogram or method¹,²
3. Vocal cord guide³
4. Digital palpation method⁴
5. 7-8-9 rule¹,⁵
6. Anthropometric measurements guide (foot length, nasal-tragus length, etc.).

Exclusion: Study Will Be Excluded If Meets Any One of the Following
- Study type: Descriptive studies, observational studies, case reports, case series (<10 patients), conference abstracts, and letters to the editor
- Duplicate studies/confERENCE abstract of same trial
- No outcomes evaluated

References

Supplementary Material B Screening Form

Inclusion: Study Must Meet All Three Steps to Be Included

STEP 1: Included studies are randomized or quasi-randomized controlled trials.

STEP 2: Reports should provide at least one of study outcome neonates admitted to neonatal intensive care unit (NICU) requiring oral or nasal intubation in NICU or delivery room.
Supplementary Material C Assessment of Risk of Bias

The risk of bias determined using criteria outlined in the Cochrane Handbook for Systematic Reviews of Intervention. The following domains were evaluated and entered into the risk of bias table:

1. Sequence generation (to determine for possible selection bias). Was the allocation sequence adequately generated?

   For each included study, the method used to generate the allocation sequence categorized as: (1) low risk: any truly random process such as random number table, computer random number generator; (2) high risk: any nonrandom process such as odd or even date of birth, clinic or hospital medical record number; or (3) unclear risk: information insufficient to permit any judgment.

2. Allocation concealment (to determine for possible selection bias). Was allocation adequately concealed?

   For each included study, the method used to conceal the allocation sequence categorized as: (1) low risk: telephone or central randomization, consecutively numbered sealed opaque envelopes; (2) high risk: open random allocation such as nonopaque or unsealed envelopes, alternation, date of birth; or (3) unclear risk: information insufficient to permit any judgment.

3. Blinding (to determine for possible performance bias). Was knowledge of the allocated intervention adequately prevented from participants and personnel during the study? At study entry? From outcome assessors?

   For each included study, the methods used to blind study participants and personnel from knowledge of which intervention a participant received, categorized as: low risk, high risk, or unclear risk for participants and personnel; or low risk, high risk, or unclear risk for outcome assessors. Blinding was assessed separately for different outcomes or classes of outcomes. The objective (prespecified) outcomes in the absence of blinding were classified as unclear for outcomes assessment.

4. Incomplete outcome data (to determine for possible attrition bias through withdrawals, dropouts, protocol deviations). Were incomplete outcome data adequately addressed?

   For each included study and for each outcome, the completeness of data including attrition and exclusions from the analysis were assessed and categorized as: (1) low risk: if the missing data are less than 20%; (2) high risk: if the missing data are more than 20%; or (3) unclear risk: information insufficient to permit judgment.

5. Selective reporting bias. Are reports of the study free of suggestion of selective outcome reporting?

   The included studies categorized as: (1) low risk: If all of the study’s prespecified outcomes and all expected outcomes of interest are clearly reported; (2) high risk: If all of the study’s prespecified outcomes have not been reported; one or more reported primary outcomes were not prespecified;

   The study did not report results of a key outcome that would have been expected to have been reported; or (3) unclear risk: information insufficient to permit judgment.

6. Other sources of bias. Was the study apparently free of other problems that could put it at high risk of bias?

   Any significant concerns as possible sources of bias assessed and categorized as: (1) low risk: no other sources of bias identified; (2) high risk: whether a potential source of bias was related to the specific study design, whether the trial was stopped early owing to some data-dependent process; or (3) unclear risk: insufficient information to assess if bias exists.

Reference

1 Higgins JPT, Green S. Cochrane Handbook for Systematic Reviews of Interventions. West Sussex, United Kingdom: Wiley; 2011

Supplementary Material D List of Excluded Studies

<table>
<thead>
<tr>
<th>Study author (year)</th>
<th>Reasons for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gill et al(2016)</td>
<td>Duplicate (conference abstract), the published study is included</td>
</tr>
<tr>
<td>Jain et al(2003)</td>
<td>Duplicate (conference abstract), the published study is included</td>
</tr>
<tr>
<td>Shukla et al(1997)</td>
<td>Observational study</td>
</tr>
</tbody>
</table>

References