**Home non-invasive oxygenation strategies in COPD patients with chronic hypercapnic respiratory failure: a systematic review and network meta-analysis**

*Supplement*

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## eTable 1. Search strategy

|  |
| --- |
| **Database: Embase <1974 to 2023 July 14>**  **Search Strategy:**  **1**  noninvasive ventilation/ or positive pressure ventilation/ (21275)  **2**  (BiPAP or BPAP or CPAP or APAP or HMV or IPPB or IPPV or NIAV or NIV or NPPV or PAP or PAV).ti,ab,kf. (74050)  **3**  (((facial or face or nasal) adj2 mask\*) or ((respiration\* or respiratory or breathing) adj2 (assist\* or controlled or mechanical)) or "artificial respiration\*").ti,ab,kf. (17583)  **4**  ("noninvasive positive pressure ventilat\*" or "non-invasive positive pressure ventilat\*" or "noninvasive ventilation" or "non-invasive ventilation" or (Positive adj2 pressure\*)).ti,ab,kf. (52060)  **5**  high flow nasal cannula therapy/ (5250)  **6**  (HFNC or HFNP or Vapotherm or Optiflow or "Oxygen Regulator\*").ti,ab,kf. (2678)  **7**  ((high flow or highflow or high frequency) adj3 (can?ul\* or nasal\* or oxygen\* or therapy)).ti,ab,kf. (8608)  **8**  (transnasal adj3 insufflation).ti,ab,kf. (160)  **9**  1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 (133088)  **10**  Obstructive Airway Disease/ or Chronic Bronchitis/ or Lung Emphysema/ (29861)  **11**  exp Chronic Obstructive Lung Disease/ (174289)  **12**  emphysema$.mp. (55358)  **13**  (chronic$ adj3 bronchiti$).mp. (20073)  **14**  (obstruct$ adj3 (pulmonary or lung$ or airway$ or airflow$ or bronch$ or respirat$)).mp. (260171)  **15**  (COPD or COAD or COBD or AECB).mp. (113879)  **16**  10 or 11 or 12 or 13 or 14 or 15 (325636)  **17**  Randomized Controlled Trials as Topic/ or randomized controlled trial/ or randomization/ or Double Blind Procedure/ or Single Blind Procedure/ or exp Clinical Trial/ or exp controlled clinical trial/ (2138095)  **18**  ((singl\* or doubl\* or tripl\* or trebl\*) adj3 (blind\* or mask\* or method\* or procedure\*)).ti,ab,kf. (398745)  **19**  (((clinical or control\*) adj2 trial\*) or random\*).tw,kf. (2513826)  **20**  17 or 18 or 19 (3648801)  **21**  9 and 16 and 20 (2782)  **22**  limit 21 to (adult <18 to 64 years> or aged <65+ years>) (1533)  **23**  limit 21 to (embryo or infant or child or preschool child <1 to 6 years> or school child <7 to12 years> or adolescent <13 to 17 years>) (164)  **24**  23 not 22 (107)  **25**  21 not 24 (2675) |
| **Database: Ovid MEDLINE(R) ALL <1946 to July 14, 2023>**  **Search Strategy:**  **1**  noninvasive ventilation/ or exp \*positive-pressure respiration/ (20441)  **2**  (BiPAP or BPAP or CPAP or APAP or HMV or IPPB or IPPV or NIAV or NIV or NPPV or PAP or PAV).ti,ab,kf. (44133)  **3**  (((facial or face or nasal) adj2 mask\*) or ((respiration\* or respiratory or breathing) adj2 (assist\* or controlled or mechanical)) or "artificial respiration\*").ti,ab,kf. (14241)  **4**  ("noninvasive positive pressure ventilat\*" or "non-invasive positive pressure ventilat\*" or "noninvasive ventilation" or "non-invasive ventilation" or (Positive adj2 pressure\*)).ti,ab,kf. (33150)  **5**  Oxygen Inhalation Therapy/ (15980)  **6**  (HFNC or HFNP or Vapotherm or Optiflow or "Oxygen Regulator\*").ti,ab,kf. (1354)  **7**  ((high flow or highflow or high frequency) adj3 (can?ul\* or nasal\* or oxygen\* or therapy)).ti,ab,kf. (4667)  **8**  (transnasal adj3 insufflation).ti,ab,kf. (102)  **9**  1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 (99219)  **10**  Lung Diseases, Obstructive/ (18283)  **11**  exp Pulmonary Disease, Chronic Obstructive/ (66857)  **12**  emphysema$.mp. (39593)  **13**  (chronic$ adj3 bronchiti$).mp. (12045)  **14**  (obstruct$ adj3 (pulmonary or lung$ or airway$ or airflow$ or bronch$ or respirat$)).mp. (138090)  **15**  (COPD or COAD or COBD or AECB).mp. (59914)  **16**  10 or 11 or 12 or 13 or 14 or 15 (182961)  **17**  Randomized Controlled Trials as Topic/ or randomized controlled trial/ or Random Allocation/ or Double Blind Method/ or Single Blind Method/ or exp Clinical Trial/ (1230181)  **18**  ((singl\* or doubl\* or tripl\* or trebl\*) adj3 (blind\* or mask\* or method\* or procedure\*)).ti,ab,kf. (271919)  **19**  (((clinical or control\*) adj2 trial\*) or random\*).tw,kf. (1779335)  **20**  17 or 18 or 19 (2407363)  **21**  9 and 16 and 20 (1785)  **22**  limit 21 to ("all adult (19 plus years)" or "young adult (19 to 24 years)" or "adult (19 to 44 years)" or "young adult and adult (19-24 and 19-44)" or "middle age (45 to 64 years)" or "middle aged (45 plus years)" or "all aged (65 and over)" or "aged (80 and over)") (1047)  **23**  limit 21 to ("all infant (birth to 23 months)" or "all child (0 to 18 years)" or "newborn infant (birth to 1 month)" or "infant (1 to 23 months)" or "preschool child (2 to 5 years)" or "child (6 to 12 years)" or "adolescent (13 to 18 years)") (146)  **24**  23 not 22 (94)  **25**  21 not 24 (1691) |
| **Scopus ALL <1946 to July 14, 2023>**  ( ( TITLE-ABS-KEY ( "chronic airflow disease\*"  OR  "chronic airflow disorder\*"  OR  "chronic airflow limitation\*"  OR  "chronic airflow obstruction\*"  OR  "chronic airway disease\*"  OR  "chronic airway disorder\*"  OR  "chronic airway limitation\*"  OR  "chronic airway obstruction\*"  OR  "chronic bronchitis"  OR  "chronic obstructive airflow disease\*"  OR  "chronic obstructive airflow disorder\*"  OR  "chronic obstructive airway disease\*"  OR  "chronic obstructive airway disorder\*"  OR  "chronic obstructive bronchitis"  OR  "chronic obstructive bronchopulmonary disease\*"  OR  "chronic obstructive broncho-pulmonary disease\*"  OR  "chronic obstructive bronchopulmonary disorder\*"  OR  "chronic obstructive broncho-pulmonary disorder\*"  OR  "chronic obstructive lung disease\*"  OR  "chronic obstructive lung disorder\*"  OR  "chronic obstructive pulmonary disease\*"  OR  "chronic obstructive pulmonary disorder\*"  OR  "chronic obstructive respiratory disease\*"  OR  "chronic obstructive respiratory disorder\*"  OR  coad  OR  copd  OR  emphysema  OR  "obstructive lung disease"  OR  "obstructive lung disorder\*"  OR  "obstructive pulmonary disease\*"  OR  "obstructive pulmonary disorder\*"  OR  "obstructive pulmonary tract disease\*"  OR  "obstructive pulmonary tract disorder\*"  OR  "obstructive respiratory disease\*"  OR  "obstructive respiratory disorder\*"  OR  "obstructive respiratory tract disease\*"  OR  "obstructive respiratory tract disorder\*" ) )  AND  ( ( INDEXTERMS ( "clinical trials"  OR  "clinical trials as a topic"  OR  "randomized controlled trial"  OR  "Randomized Controlled Trials as Topic"  OR  "controlled clinical trial"  OR  "Controlled Clinical Trials"  OR  "random allocation"  OR  "Double-Blind Method"  OR  "Single-Blind Method"  OR  "Cross-Over Studies"  OR  "Placebos"  OR  "multicenter study"  OR  "double blind procedure"  OR  "single blind procedure"  OR  "crossover procedure"  OR  "clinical trial"  OR  "controlled study"  OR  "randomization"  OR  "placebo" ) )  OR  ( TITLE-ABS-KEY ( ( "clinical trials"  OR  "clinical trials as a topic"  OR  "randomized controlled trial"  OR  "Randomized Controlled Trials as Topic"  OR  "controlled clinical trial"  OR  "Controlled Clinical Trials as Topic"  OR  "random allocation"  OR  "randomly allocated"  OR  "allocated randomly"  OR  "Double-Blind Method"  OR  "Single-Blind Method"  OR  "Cross-Over Studies"  OR  "Placebos"  OR  "cross-over trial"  OR  "single blind"  OR  "double blind"  OR  "factorial design"  OR  "factorial trial" ) ) )  OR  ( TITLE-ABS ( clinical  AND  trial\*  OR  trial\*  OR  rct\*  OR  random\*  OR  blind\* ) ) )  AND  ( ( TITLE-ABS-KEY ( "noninvasive ventilation"  OR  "non-invasive ventilation"  OR  "positive-pressure respiration"  OR  "positive end-expiratory pressure\*"  OR  bipap  OR  bpap  OR  cpap  OR  apap  OR  hmv  OR  ippb  OR  ippv  OR  niav  OR  niv  OR  nppv  OR  pap  OR  pav  OR  "noninvasive positive pressure ventilation"  OR  "non-invasive positive pressure ventilation"  OR  "Positive Airway Pressure\*" ) )  OR  ( TITLE-ABS-KEY ( "Oxygen Inhalation Therapy"  OR  hfnc  OR  hfnp  OR  vapotherm  OR  optiflow  OR  "Oxygen Regulator\*"  OR  "high flow nasal"  OR  "highflow nasal"  OR  "high frequency nasal"  OR  "high flow cannul\*"  OR  "highflow cannul\*"  OR  "high frequency cannul\*"  OR  "high flow oxygen"  OR  "highflow oxygen"  OR  "high frequency oxygen"  OR  "high flow therapy"  OR  "highflow therapy"  OR  "high frequency therapy"  OR  "transnasal insufflation" ) ) ) )  AND NOT  ( TITLE-ABS-KEY ( newborn\*  OR  neonat\*  OR  infant\*  OR  toddler\*  OR  child\*  OR  adolescent\*  OR  paediatric\*  OR  pediatric\*  OR  girl  OR  girls  OR  boy  OR  boys  OR  teen  OR  teens  OR  teenager\*  OR  preschooler\*  OR  "pre-schooler\*"  OR  preteen  OR  preteens  OR  "pre-teen"  OR  "pre-teens"  OR  youth  OR  youths )  AND NOT  TITLE-ABS-KEY ( adult  OR  adults  OR  "middle age"  OR  "middle aged"  OR  elderly  OR  geriatric\*  OR  "old people"  OR  "old person\*"  OR  "older people"  OR  "older person\*"  OR  "very old" ) ) |
| **Cochrane CENTRAL**  Search Name:  Date Run: 14/07/2023 23:56:28  Comment:  ID Search Hits  #1 MeSH descriptor: [Noninvasive Ventilation] this term only 634  #2 MeSH descriptor: [Positive-Pressure Respiration] this term only 1840  #3 MeSH descriptor: [Oxygen Inhalation Therapy] this term only 1514  #4 (transnasal NEAR/3 insufflation):ti,ab,kw 94  #5 (BiPAP or BPAP or CPAP or APAP or HMV or IPPB or IPPV or NIAV or NIV or NPPV or PAP or PAV):ti,ab,kw 10404  #6 (((facial or face or nasal) NEAR/2 mask\*) or ((respiration\* or respiratory or breathing) NEAR/2 (assist\* or controlled or mechanical)) or artificial NEXT respiration\*):ti,ab,kw 12201  #7 ("noninvasive positive pressure ventilat\*" or "non-invasive positive pressure ventilat\*" or "noninvasive ventilation" or "non-invasive ventilation" or (Positive adj2 pressure\*)):ti,ab,kw 3009  #8 HFNC or HFNP or Vapotherm or Optiflow or Oxygen NEXT Regulator\*:ti,ab,kw 937  #9 ((high flow or highflow or high frequency) NEAR/3 (can?ul\* or nasal\* or oxygen\* or therapy)):ti,ab,kw 14091  #10 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 36893  #11 MeSH descriptor: [Lung Diseases, Obstructive] this term only 3317  #12 MeSH descriptor: [Pulmonary Disease, Chronic Obstructive] explode all trees 7248  #13 emphysema\*:ti,ab,kw 1743  #14 (chronic\* NEAR/3 bronchiti\*):ti,ab,kw 2122  #15 (obstruct\* NEAR/3 (pulmonary or lung\* or airway\* or airflow\* or bronch\* or respirat\*)):ti,ab,kw 23351  #16 (COPD or COAD or COBD or AECB):ti,ab,kw 18937  #17 #11 or #12 or #13 or #14 or #15 or #16 30693  #18 #10 AND #17 3179  #19 (child\* or adolescen\* or pediatric\* or paediatric\* or newborn or neonatal):ti,ab,kw 329565  #20 #18 NOT #19 2911  Limit to trials 2888 |
| We based the search strategy from Cochrane Airways (<https://airways.cochrane.org/about-us>)  The search strategy aimed to locate both published and unpublished studies. A three-step search strategy was utilized in this review.  First an initial limited search of MEDLINE (Ovid) and Clinicaltrials.gov was undertaken to identify studies on this topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the trials were used to develop a full search strategy for *Medline (Ovid), Embase (Ovid), CENTRAL (via Cochrane Register of Studies), Scopus and Clinicaltrials.gov (see Appendix #*). The search strategy was developed by adapting strategies from previous reviews, including all identified keywords and index terms, and was adapted for each included database. All databases and trials registries were searched from their inception to the present, and there was no restriction on language or type of publication. The reference list of all included sources of evidence was screened for additional studies. Following the search, all identified citations was collated and uploaded into EndNote and duplicates removed. |

## eTable 2. Risk of bias assessments

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** |  | **Outcome** | **Bias arising from the randomization process** | **Bias due to deviations from the intended intervention** | **Bias due to missing outcome data** | **Bias in measurement of the outcome** | **Bias in selection of the reported results** | **Risk of bias arising from period and carryover effects** | **Overall** |
| Casanova et al. 2000 |  | Mortality | Low | Probably high | High | Probably low | Probably low | NA | High |
| Clini et al. 2002 |  | Mortality | Low | Probably high | High | Probably low | Probably low | NA | High |
| Duiverman et al. 2011 |  | Mortality | Low | Probably high | High | Probably low | Probably high | NA | High |
| McEvoy et al. 2009 |  | Mortality | Low | Probably high | High | Probably low | Probably low | NA | High |
| Murphy et al. 2017 |  | Mortality | Low | Probably low | High | Probably low | Probably low | NA | High |
| Storgaard et al. 2018 |  | Mortality | Low | Probably high | High | Probably low | Low | NA | High |
| Struik et al. 2014 |  | Mortality | Low | Probably high | High | Probably low | Probably low | NA | High |
| Braunlich et al. 2019 |  | Mortality | Low | Probably high | High | Probably low | Low | Low | High |
| Nagata et al. 2022 |  | Mortality | Low | Probably high | High | Probably low | Probably low | NA | High |
| Koehnlein et al. 2014 |  | Mortality | Low | Probably low | Low | Probably low | Low | NA | Low |
| Rea et al. 2010 |  | Mortality | Low | Probably low | Probably low | Probably low | Probably low | NA | Low |
| Zhou et al. 2017 |  | Mortality | Low | Probably low | Low | Probably low | Probably high | NA | Some concerns |
| Xiang et al. 2007 |  | Mortality | Low | Probably high | High | Probably low | Probably high | NA | High |
| Kaminski et al. 1999 |  | Mortality | Low | Probably high | High | Probably low | Probably high | NA | High |
| Bhatt et al. 2013 |  | Exacerbations | Low | Probably high | Probably low | High | Probably low | NA | High |
| Casanova et al. 2000 |  | Exacerbations | Low | Probably high | High | Probably low | Probably low | NA | High |
| Cheung et al. 2010 |  | Exacerbations | Low | Probably high | High | Probably low | Low | NA | High |
| Garrod et al. 2000 |  | Exacerbations | Low | Probably high | High | Probably low | Probably low | NA | High |
| Murphy et al. 2017 |  | Exacerbations | Low | Probably low | High | Probably low | Probably low | NA | High |
| Storgaard et al. 2018 |  | Exacerbations | Low | Probably high | High | Probably low | Low | NA | High |
| Braunlich et al. 2019 |  | Exacerbations | Low | Probably high | High | Probably low | Low | Low | High |
| Nagata et al. 2018 |  | Exacerbations | Low | Probably high | Low | Probably low | Probably low | Low | High |
| Nagata et al. 2022 |  | Exacerbations | Low | Probably high | High | Probably low | Probably low | NA | High |
| Rea et al. 2010 |  | Exacerbations | Low | Probably low | Probably low | Probably low | Probably low | NA | Low |
| Kohnlein et al. 2014 |  | QOL | Low | Probably high | Low | Probably high | Probably high | NA | High |
| Murphy et al. 2017 |  | QOL | Low | Probably high | High | Probably high | Probably low | NA | High |
| Rea et al. 2010 |  | QOL | Low | Probably high | Probably low | Probably high | Probably low | NA | High |
| Storgaard et al. 2018 |  | QOL | Low | Probably high | High | Probably high | Low | NA | High |
| Braunlich et al. 2019 |  | QOL | Low | Probably high | High | Probably high | Low | Low | High |
| Nagata et al. 2018 |  | QOL | Low | Probably high | Low | Probably high | Probably low | Low | High |
| Nagata et al. 2022 |  | QOL | Low | Probably high | High | Probably high | Probably low | NA | high |
| Casanova et al. 2000 |  | Hospitalizations | Low | Probably high | High | Probably low | Probably low | NA | High |
| Clini et al. 2002 |  | Hospitalizations | Low | Probably high | High | Probably low | Probably low | NA | High |
| McEvoy et al. 2009 |  | Hospitalizations | Low | Probably high | High | Probably low | Probably low | NA | High |
| Storgaard et al. 2018 |  | Hospitalizations | Low | Probably high | High | Probably low | Low | NA | High |
| Struik et al. 2014 |  | Hospitalizations | Low | Probably high | High | Probably high | Probably low | NA | High |
| Rea et al. 2010 |  | Hospitalizations | Low | Probably low | Probably low | Probably low | Probably low | NA | Low |
| Kohnlein et al. 2014 |  | Hospitalizations | Low | Probably low | Low | Probably low | Probably high | NA | Some concerns |

## eTable 3. Heterogeneity statistics for each network

|  |  |
| --- | --- |
| **Mortality** |  |
| Heterogeneity | tau^2 = 0.0088; tau = 0.0936; I^2 = 6.5% [0.0%; 61.0%] |
| **Acute exacerbations** |  |
| Heterogeneity | tau^2 < 0.0001; tau < 0.0001; I^2 = 0% [0.0%; 64.8%] |
| **Hospitalizations** |  |
| Heterogeneity | tau^2 < 0.0001; tau < 0.0001; I^2 = 0% [0.0%; 79.2%] |
| **SGRQ** |  |
| Heterogeneity | tau^2 = 25.0607; tau = 5.0061; I^2 = 74.5% [42.1%; 88.8%] |

## eTable 4. Mortality network estimates and GRADE assessments

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mortality | Comparison | Network estimate | | | Absolute estimate | | | GRADE | | | | | |
|  | **Relative estimate** | | | **Risk difference** | | |
| Treatment 1 | Treatment 2 | Point estimate | CI Lower limit | CI upper limit | Point estimate | CI lower limit | CI upper limit | Starting evidence | Incoherence | Intransitivity | **Starting rating** | Imprecision | **Final rating** |
| Non-invasive ventilation | Control | 0.82 | 0.66 | 1 | -30.6 | -57.8 | 0 | Moderate | None | None | **Moderate** | Serious | **Low** |
| Non-invasive ventilation | HFNC | 0.69 | 0.35 | 1.34 | -63.24 | -132.6 | 69.36 | Moderate | None | None | **Moderate** | Very serious | **Very low** |
| HFNC | Control | 1.2 | 0.63 | 2.27 | 34 | -62.9 | 215.9 | Moderate | None | None | **Moderate** | Very serious | **Very low** |

## eTable 5. Acute exacerbation network estimates and GRADE assessments

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Acute exacerbations | Comparison | Network estimate | | | Absolute estimate | | | GRADE | | | | | |
|  | **Relative estimate** | | | **Risk difference** | | |
| Treatment 1 | Treatment 2 | Point estimate | CI Lower limit | CI upper limit | Point estimate | CI lower limit | CI upper limit | Starting evidence | Incoherence | Intransitivity | **Starting rating** | Imprecision | **Final rating** |
| Noninvasive ventilation | Control | 0.71 | 0.58 | 0.87 | -145 | -210 | -65 | Moderate | No concerns | No concerns | **Moderate** | No concerns | **Moderate** |
| Noninvasive ventilation | HFNC | 0.92 | 0.72 | 1.16 | -28.4 | -99.4 | 56.8 | Moderate | No concerns | No concerns | **Moderate** | Serious | **Low** |
| HFNC | Control | 0.77 | 0.68 | 0.88 | -115 | -160 | -60 | Moderate | No concerns | No concerns | **Moderate** | No concerns | **Moderate** |

## eTable 6. Hospitalization network estimates and GRADE assessments

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Hospitalizations | Comparison | Network estimate | | | Absolute estimate | | | GRADE | | | | | |
|  | **Relative estimate** | | | **Risk difference** | | |
| Treatment 1 | Treatment 2 | Point estimate | CI Lower limit | CI upper limit | Point estimate | CI lower limit | CI upper limit | Starting evidence | Incoherence | Intransitivity | **Starting rating** | Imprecision | **Final rating** |
| Non-invasive ventilation | Control | 1.03 | 0.97 | 1.09 | 4.5 | -4.5 | 13.5 | Direct | No concerns | No concerns | **Moderate** | Serious | **Low** |
| Non-invasive ventilation | HFNC | 1.18 | 0.94 | 1.5 | 27 | -9 | 75 | Direct | No concerns | No concerns | **Moderate** | Serious | **Low** |
| HFNC | Control | 0.87 | 0.69 | 1.09 | -19.5 | -46.5 | 13.5 | Direct | No concerns | No concerns | **Moderate** | Serious | **Low** |

## eTable 7. SGRQ network estimates and GRADE assessments

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SGRQ | Comparison | Network estimate | | | GRADE | | | | | |
|  | **Relative estimate** | | |
| Treatment 1 | Treatment 2 | Point estimate | CI Lower limit | CI upper limit | Starting evidence | Incoherence | Intransitivity | Starting rating | Imprecision | Final rating |
| Noninvasive ventilation | Control | -3.81 | -10.84 | 3.23 | Low | No concerns | No concerns | Low | Serious | Very low |
| Noninvasive ventilation | HFNC | 3.22 | -4.18 | 10.61 | Moderate | No concerns | No concerns | Moderate | Very serious | Very low |
| HFNC | Control | -7.02 | -12.27 | -1.77 | Moderate | No concerns | No concerns | Moderate | Serious | Low |

## eFigure 1. Mortality/Pairwise analysis

A screenshot of a graph

Description automatically generated

## eFigure 2. Mortality/Node split analysis

A graph with numbers and a line

Description automatically generated

## eFigure 3. Mortality/Network estimates

A graph with numbers and a line

Description automatically generated

## eFigure 4. Mortality plot/Network funnel plot

A screen shot of a graph

Description automatically generated

## eFigure 5. Acute exacerbation/Pairwise analysis

A screenshot of a graph

Description automatically generated with low confidence

## eFigure 6. Acute exacerbation/Node split analysis

A picture containing text, screenshot, diagram, font

Description automatically generated

## eFigure 7. Acute exacerbation/Network estimates

A picture containing text, screenshot, font, line

Description automatically generated

## eFigure 8. Acute exacerbation plot/Network funnel plot

A picture containing line, diagram

Description automatically generated

## eFigure 9. Hospitalization/Pairwise analysis

A picture containing text, font, screenshot, diagram

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## eFigure 10. Hospitalization/Network estimates

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## eFigure 11. Hospitalization plot/Network funnel plot

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## eFigure 12. SGRQ/Pairwise analysis

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## eFigure 13. SGRQ/Node split analysis

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## eFigure 14. SGRQ/Network estimates

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## eFigure 14. SGRQ plot/Network funnel plot

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## eFigure 15. NPPV - Mortality/stability

A screenshot of a graph

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## eFigure 16. NPPV - Mortality/PaCO2

A screenshot of a computer

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A graph of a graph

Description automatically generated

## eFigure 17. NPPV - Mortality/FEV1

A screenshot of a computer

Description automatically generatedA graph with lines and dots

Description automatically generated

## eFigure 18. NPPV- Mortality/Study year

A screenshot of a computer

Description automatically generated

A graph showing a curve

Description automatically generated

## eFigure 19. NPPV - Mortality/Risk of bias

A screenshot of a graph

Description automatically generated

## eFigure 20. HFNC – Mortality/FEV1

A screenshot of a computer

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Description automatically generated

## eFigure 21. HFNC – Mortality/PaCO2

A screenshot of a computer

Description automatically generated with medium confidenceA picture containing text, diagram, line, screenshot

Description automatically generated

## eFigure 22. HFNC – Mortality/FEV1

A screenshot of a computer

Description automatically generated with low confidenceA picture containing text, diagram, screenshot, line

Description automatically generated

## eFigure 23. HFNC – Mortality/ROB

A screenshot of a graph

Description automatically generated with low confidence