

**Additional file 5.** 1076 studies were excluded considering the title, while 58 after reading the abstract or full text. The table summarize the reason for exclusion of the 58 papers.

| Article                                                                                                                                                                                                                      | Reason for exclusion                                                                                          |
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| Weaning from Mechanical Ventilation: What Should Be Done When a Patient's Spontaneous Breathing Trial Fails? Munshi L., Ferguson N.D.                                                                                        | Article commentary                                                                                            |
| Comparison of two opposite strategies of weaning: High vs. low work of breathing: A multicentre randomised controlled trial. Subirà C. et al.                                                                                | Compares invasive mechanical ventilation to spontaneous breathing trial as weaning methods                    |
| The effect of weaning protocol based on spontaneous breathing trial on the duration of mechanical ventilation and weaning time. Jhamb U., Kishore R.                                                                         | Pediatric population                                                                                          |
| Proportional assist ventilation versus pressure support ventilation in weaning ventilation: a pilot randomised controlled trial. Botha J. et al.                                                                             | Compares two modalities of invasive mechanical ventilation as weaning methods                                 |
| An Open Label Randomized Controlled Trial to Compare Low Level Pressure Support and T-piece as Strategies for Discontinuation of Mechanical Ventilation in a General Surgical Intensive Care Unit. Chittawatanarat K. et al. | Compares invasive mechanical ventilation to spontaneous breathing trial as weaning methods                    |
| Effectiveness of continuous positive pressure ventilation in reducing the length of stay in post cardiac bypass surgery patients. Laiq N. et al.                                                                             | Compares invasive mechanical ventilation to continuous positive airway pressure as weaning methods            |
| Neurally adjusted ventilatory assist as an alternative to pressure support ventilation in adults: a French multicentre randomized trial. Demoule A. et al.                                                                   | Compares two modalities of invasive mechanical ventilation as weaning methods                                 |
| Proportional assist ventilation versus pressure support ventilation as weaning modes for mechanically ventilated patients: A randomised controlled trial. Botha J. et al.                                                    | Compares two modalities of invasive mechanical ventilation as weaning methods                                 |
| A pilot randomized trial comparing weaning from mechanical ventilation on pressure support versus proportional assist ventilation. Bosma K.J. et al.                                                                         | Compares two modalities of invasive mechanical ventilation as weaning methods                                 |
| Automatic tube compensation versus pressure support ventilation as a weaning mode, does it make a difference? Wafy S. et al.                                                                                                 | Compares invasive mechanical ventilation to spontaneous breathing trial as weaning methods                    |
| Discontinuation of ventilatory support: New solutions to old dilemmas. Peñuelas O. et al.                                                                                                                                    | Review                                                                                                        |
| Comparison of neurally adjusted ventilatory assist and pressure support ventilation during the early phase of weaning from mechanical ventilation - A randomised controlled study. Demoule A. et al.                         | Compares two modalities of invasive mechanical ventilation as weaning methods                                 |
| Comparison of proportional assist ventilation plus, T-tube ventilation, and pressure support ventilation as spontaneous breathing trials for extubation: A randomized study. Teixeira S.N. et al.                            | Compares two modalities of invasive mechanical ventilation and spontaneous breathing trial as weaning methods |
| Noninvasive ventilation in withdrawal from mechanical ventilation. Ferrer M. et al.                                                                                                                                          | Review                                                                                                        |
| Noninvasive positive-pressure ventilation as a weaning strategy for intubated adults with respiratory failure. Burns K.E. et al.                                                                                             | Review                                                                                                        |

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| Noninvasive ventilation immediately after extubation improves weaning outcome after acute respiratory failure: A randomized controlled trial. Ornico S.R. et al.                                          | Compares non-invasive ventilation to standard oxygen therapy as weaning methods                          |
| Preventive use of noninvasive ventilation after extubation: A prospective, multicenter randomized controlled trial. Su C.-L. et al.                                                                       | Compares non-invasive ventilation to a standard medical therapy as weaning methods                       |
| A five-year series on the use of noninvasive ventilation as a weaning tool from invasive ventilation. Kee A. et al.                                                                                       | Prospective observational study without groups of intervention                                           |
| Noninvasive ventilation to shorten the duration of mechanical ventilation. Epstein S.K.                                                                                                                   | Review                                                                                                   |
| Non-invasive ventilation. Nava S. et al.                                                                                                                                                                  | Review                                                                                                   |
| Benefits of non-invasive ventilation after extubation in the postoperative period of heart surgery. Lopes C.R. et al.                                                                                     | Compares non-invasive ventilation to standard oxygen therapy as weaning methods                          |
| Non-invasive ventilation in the weaning process. Ferrer M.                                                                                                                                                | Review                                                                                                   |
| Noninvasive ventilation to prevent respiratory failure after extubation in high-risk patients. Nava S. et al.                                                                                             | Compares non-invasive ventilation to a standard medical therapy as weaning modes in hypercapnic patients |
| VENISE: Non-invasive ventilation for the weaning of mechanical ventilation in acute-on-chronic respiratory failure patients. A prospective randomised controlled and multicenter trial. Girault C. et al. | Population with acute-on-chronic hypercapnic respiratory failure                                         |
| Noninvasive positive pressure ventilation as a weaning strategy for intubated adults with respiratory failure. Burns K.E. et al.                                                                          | Review                                                                                                   |
| Noninvasive ventilation during weaning from mechanical ventilation. Ferrer M. et al.                                                                                                                      | Review                                                                                                   |
| Ventilator modes used in weaning. Hess D.                                                                                                                                                                 | Review                                                                                                   |
| Noninvasive ventilation. Mehta S., Hill N.S.                                                                                                                                                              | Review                                                                                                   |
| The usefulness of noninvasive positive pressure ventilation as a new weaning method. Tae Sun Shim et al.                                                                                                  | Considers only non-invasive ventilation as weaning methods                                               |
| Noninvasive ventilation as a systematic extubation and weaning technique in acute-on-chronic respiratory failure: A prospective, randomized controlled study. Girault C. et al.                           | Population with acute-on-chronic hypercapnic respiratory failure                                         |
| The role of continuous positive airway pressure during weaning from mechanical ventilation in cardiac surgical patients. Bailey C.R. et al.                                                               | Considers only continuous positive airway pressure as weaning methods                                    |
| Randomised controlled trial of weaning by patient triggered ventilation or conventional ventilation. Chan V., Greenough A.                                                                                | Pediatric population                                                                                     |
| Targeted-Volume Noninvasive Ventilation Reduces Extubation failure in Postextubated Medical Intensive Care Unit Patients: A Randomized Controlled Trial. Thanthitaweevat V. et al.                        | Compares non-invasive ventilation to standard oxygen therapy as weaning methods                          |
| Does bilevel positive airway pressure improve outcome of acute respiratory failure after open-heart surgery? Elgebaly AS.                                                                                 | Compares invasive mechanical ventilation to non-invasive ventilation but not as weaning methods          |

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| Effects of Noninvasive Positive-Pressure Ventilation with Different Interfaces in Patients with Hypoxemia after Surgery for Stanford Type A Aortic Dissection. Yang Y. et al.                                                                   | Considers only non-invasive ventilation                                                            |
| The role of noninvasive ventilation in the ventilator discontinuation process. Hess D.                                                                                                                                                          | Review                                                                                             |
| Noninvasive mechanical ventilation in patients with acute respiratory failure after cardiac surgery. Kilger E. et al.                                                                                                                           | Considers only non-invasive ventilation                                                            |
| Noninvasive ventilation during weaning. Laier-Groeneveld G. et al.                                                                                                                                                                              | Retrospective observational study                                                                  |
| The role of noninvasive ventilation for acute respiratory failure. Hamel D.S., Klonin H.                                                                                                                                                        | Pediatric population                                                                               |
| Effect of early application of biphasic positive airway pressure on the outcome of extubation in ventilator weaning. Jiang J.S. et al.                                                                                                          | Compares non-invasive ventilation to standard oxygen therapy as weaning methods                    |
| Noninvasive techniques of weaning from mechanical ventilation. Nava S.                                                                                                                                                                          | Review                                                                                             |
| Noninvasive positive-pressure ventilation in chronic obstructive pulmonary disease. Nicholson D. et al.                                                                                                                                         | Review                                                                                             |
| Protocolised trial of invasive and non-invasive weaning off ventilation (The 'Breathe' Study). Perkins G.D.                                                                                                                                     | Study protocol                                                                                     |
| Randomized control study of sequential non-invasive following short-term invasive mechanical ventilation in the treatment of acute respiratory distress syndrome as a result of existing pulmonary diseases in elderly patients. Du L.L. et al. | Compares invasive mechanical ventilation to continuous positive airway pressure as weaning methods |
| Noninvasive Positive Pressure Ventilation for Early Extubation of Acute Hypoxemic Respiratory Failure. Nava S.                                                                                                                                  | Clinical trial not completed                                                                       |
| Effect of Postextubation High-Flow Nasal Oxygen With Noninvasive Ventilation vs High-Flow Nasal Oxygen Alone on Reintubation Among Patients at High Risk of Extubation Failure: A Randomized Clinical Trial. Thille AW. Et al.                  | Compares effect of non-invasive ventilation to high-flow nasal oxygen on reintubation rate         |
| High-flow nasal oxygen therapy alone or with non-invasive ventilation in immunocompromised patients admitted to ICU for acute hypoxemic respiratory failure: the randomised multicentre controlled FLORALI-IM protocol. Coudroy R. et al.       | Compares effect of non-invasive ventilation to high-flow nasal oxygen on not-intubated patients    |
| Prophylactic Noninvasive Ventilation Versus Conventional Care in Patients After Cardiac Surgery. Liu Q. et al                                                                                                                                   | Metanalysis                                                                                        |
| Is Protocolised Weaning that Includes Early Extubation Onto Non-Invasive Ventilation More Cost Effective Than Protocolised Weaning Without Non-Invasive Ventilation? Findings from the Breathe Study. Khan I. et al.                            | Cost-effectiveness analysis                                                                        |
| Noninvasive Ventilation as a Weaning Strategy in Subjects with Acute Hypoxemic Respiratory Failure. Shan. M. et al.                                                                                                                             | Metanalysis                                                                                        |
| Effect of Sequential Noninvasive Ventilation on Early Extubation After Acute Type A Aortic Dissection. Liu K. et al.                                                                                                                            | Retrospective study                                                                                |

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| Neurally Adjusted Ventilatory Assist versus Pressure Support Ventilation in Difficult Weaning: a Randomized Trial. Liu L. et al.                                                                                         | Compares two modalities of invasive mechanical ventilation as weaning methods |
| Neurally adjusted ventilatory assist as an alternative to pressure support ventilation in difficult-to-wean patients: a single center randomized trial. Liu L. et al.                                                    | Compares two modalities of invasive mechanical ventilation as weaning methods |
| Neurally adjusted ventilatory assist versus pressure support ventilation: a randomized controlled feasibility trial performed in patients at risk of prolonged mechanical ventilation. Hadfield DJ. et al.               | Compares two modalities of invasive mechanical ventilation as weaning methods |
| Effect of Pressure Support vs T-Piece Ventilation Strategies During Spontaneous Breathing Trials on Successful Extubation Among Patients Receiving Mechanical Ventilation: a Randomized Clinical Trial. Subirà C. et al. | Compares two modalities of invasive mechanical ventilation as weaning methods |
| Early Extubation for Patients With Acute Hypoxemic Respiratory Failure.                                                                                                                                                  | Registered trial                                                              |
| Characteristics of intensive care unit patients after planned extubation with Noninvasive ventilation and reintubation. Chang Y.                                                                                         | Not RCT, only abstract                                                        |