<table>
<thead>
<tr>
<th>Section/item</th>
<th>Item No</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative information</td>
<td></td>
<td><strong>Title</strong>: Neurally adjusted ventilatory assist in patients with acute respiratory failure: study protocol for a randomized controlled trial</td>
</tr>
<tr>
<td>Trial registration</td>
<td>2a</td>
<td>clinicalTrial.gov (NCT01730794).</td>
</tr>
<tr>
<td>Protocol version</td>
<td>3</td>
<td>28 February 2014</td>
</tr>
<tr>
<td>Funding</td>
<td>4</td>
<td>Instituto de Salud Carlos III, Madrid, Spain (PI13/0119), CIBER de Enfermedades Respiratorias, Spain (CB06/06/1088), MAQUET-Getinge (Solna, Sweden) and Asociación Científica Pulmón y Ventilación Mecánica (Las Palmas de Gran Canaria, Spain).</td>
</tr>
<tr>
<td>Roles and responsibilities</td>
<td>5a</td>
<td>The role and responsibilities of investigators are fully explained in pages 14, 15, 16, and 17 of the manuscript.</td>
</tr>
<tr>
<td></td>
<td>5b</td>
<td>Promotor: Jesús Villar, Hospital Universitario Dr. Negrín, Las Palmas, Spain.</td>
</tr>
<tr>
<td></td>
<td>5c</td>
<td>Study funders have no role in collection, management, analysis, and interpretation of data; writing of the report; and the decision to submit the report for publication.</td>
</tr>
<tr>
<td></td>
<td>5d</td>
<td>See Pages 14 and 15 of the manuscript for composition, roles, and responsibilities of the coordinating centre, steering committee, endpoint adjudication committee, data management team, and other individuals or groups overseeing the trial.</td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
<td><strong>Background and rationale</strong>: Done. Page 3 of the manuscript.</td>
</tr>
<tr>
<td></td>
<td>6a</td>
<td>Done. Page 3 of the manuscript.</td>
</tr>
<tr>
<td></td>
<td>6b</td>
<td>Done. Page 3 of the manuscript.</td>
</tr>
<tr>
<td>Objectives</td>
<td>7</td>
<td>Specific objectives or hypotheses are stated in Page 3 of the manuscript.</td>
</tr>
<tr>
<td>Trial design</td>
<td>8</td>
<td>Description of trial design including type of trial, allocation ratio, and framework is reported in the Abstract (page 2 of the manuscript) and in the Methods section (pages 4 and 5 of the manuscript).</td>
</tr>
</tbody>
</table>
Methods: Participants, interventions, and outcomes

Study setting 9 Description of study settings and country (Spain) are described in Methods section (page 4 and Appendix 1).

Eligibility criteria 10 Inclusion and exclusion criteria for participants are fully reported in page 5 of the manuscript.

Interventions 11a Interventions for each group with sufficient detail to allow replication, including how and when they will be administered is reported in pages 5 and 6 of the manuscript.

11b Criteria for discontinuing or modifying allocated interventions for a given trial participant are stated in the inform consent form.

11c Strategies to improve adherence to intervention protocols, and any procedures for monitoring adherence are stated in pages 6 to 9 of the manuscript, and in the Electronic Supplementary Material file.

11d There are no specific concomitant care and interventions that are permitted or prohibited during the trial that are applicable to this trial.

Outcomes 12 Primary, secondary, and other outcomes and time point for each outcome are stated in page 10 of the manuscript. Explanation of the clinical relevance of chosen efficacy and harm outcomes is explained in pages 10 and 11 (under the subheading “interim analysis”).

Participant timeline 13 Time schedule of enrolment, interventions, assessments, and follow-up for participants are reported in pages 5 to 10 of the manuscript. A schematic diagram is provided as Figure 1.

Sample size 14 Estimated number of participants needed to achieve study objectives and how it was determined, including clinical and statistical assumptions supporting any sample size calculations is fully reported in page 10 of the manuscript.

Recruitment 15 Strategies for achieving adequate participant enrolment to reach target sample size: not applicable. Patients are consecutively admitted in participating ICUs.

Methods: Assignment of interventions (for controlled trials)

Allocation:

Sequence generation 16a Method of generating the allocation sequence is stated in page 6 of the manuscript. There is no stratification. To reduce predictability of a random sequence, random assignment is inside individual numbered envelopes that are opaque and sealed. The Project manager has a copy of the random sequence of each center.

Allocation concealment mechanism 16b As stated above, the mechanism of implementing the allocation sequence is by sequentially numbered, opaque, sealed envelopes provided in blocks of 10 envelopes to each participating center.
Implementation 16c The allocation sequence was done according to a computer-generated random-number table, as stated in page 6 of the manuscript.

Blinding (masking) 17a The study is not blinded.

Methods: Data collection, management, and analysis

Data collection methods 18a A description of the plans for assessment and collection of outcome, and trial data is stated in pages 9 and 11.

18b A Project Manager is responsible for promoting patient enrolment and complete follow-up, including list of any outcome data to be collected for participants who discontinue or deviate from intervention protocols.

Data management 19 Plans for data entry, coding, security, and storage, including any related processes to promote data quality is stated in pages 9 and 10 of manuscript.

Statistical methods 20a Statistical methods for analysing primary and secondary outcomes and other data are clearly stated in page 11 of the manuscript.

Methods: Monitoring

Data monitoring 21a Details on composition of data monitoring committee, its role, reporting structure and statement of whether it is independent from the sponsor and competing interests are stated in pages 14 and 15 of the manuscript.

21b Description of any interim analyses and stopping guidelines is stated in pages 10 and 11 of the manuscript.

Harms 22 Plans for collecting, assessing, reporting, and managing solicited and spontaneously reported adverse events and other unintended effects of trial interventions or trial conduct will be controlled by the Project manager. There is a separate form in the protocol for reporting adverse events (see Electronic supplementary material)

Auditing 23 There is no on-site auditing of the trial. Before exporting the data into a computerized data base at the coordinating center, a trained Project Manager will check the completeness and the quality of information. More details in page 11 of the manuscript.

Ethics and dissemination

Research ethics approval 24 The study has been approved by a referral Ethics Committee. According to Spanish legislation, all participating hospitals only require the approval of a coordinating center.

Protocol amendments 25 The Steering Committee and the Project manager will communicate important protocol modifications (when applicable) to relevant parties (investigators, IRBs, trial participants, regulators).

Consent or assent 26a Participating investigators are responsible for obtaining informed consent from patients or patient’s legal representative (see page 5 of the manuscript.)
### Confidentiality
Patient information is anonymized.

### Declaration of interests
Competing interest are stated in page 17 of the manuscript.

### Access to data
As stated in page 17 of the manuscript, the principal investigator (JV), the clinical epidemiologist (LPM) and the Project Manager (RLF) will have access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

### Ancillary and post-trial care
The trial is covered by an insurance policy, as mandatory by Spanish legislation (Zurich company).

### Dissemination policy
Results of the trial will be published in international journals. There is no obligation for communicating the results to individual patients. However, this information will be public.

All participant investigators have the right to be authors of the final publication.

### Appendices

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informed consent materials</td>
<td>32</td>
</tr>
<tr>
<td>Biological specimens</td>
<td>33</td>
</tr>
</tbody>
</table>

A copy of the informed consent form (in Spanish) will be provided as additional information at the time of manuscript submission.

Not applicable

*It is strongly recommended that this checklist be read in conjunction with the SPIRIT 2013 Explanation & Elaboration for important clarification on the items. Amendments to the protocol should be tracked and dated. The SPIRIT checklist is copyrighted by the SPIRIT Group under the Creative Commons “Attribution-NonCommercial-NoDerivs 3.0 Unported” license.*