Reviewer’s report

Title: Cluster randomised comparison of the effectiveness of 100% oxygen versus titrated oxygen in patients with a sustained return of spontaneous circulation following out of hospital cardiac arrest: a feasibility study. PROXY: Post ROSC OXYgenation Study

Version: 0 Date: 15 Jul 2018

Reviewer: Clifton W Callaway

Reviewer's report:

This trial tested the feasibility of titrating oxygen level during the first hour after cardiac arrest, in preparation for a clinical trial that would test whether such titration is superior to current usual care with high oxygen concentrations. It appears that this intervention can be delivered, but the presentation will benefit from adding a number of important details.

The Introduction makes clear that the trial is intended to test feasibility. Near the end, consider stating exactly what criteria for feasibility are being tested. For example, the trial tests whether, in a majority of patients, paramedics could monitor SpO2, and whether paramedics could titrate FiO2.

The intervention is depicted in Figure 1. Add how often do paramedics are instructed to titrate oxygen (e.g. every 2 minutes? Every 5 minutes?).

Another aspect of care related to this intervention is the choice of airway. Are all patients endotracheally intubated or do some have supraglottic airways? Are the criteria or protocols different for these different airways?

Group assignment is not perfectly clear. In the methods, the trial seems to be a one-arm trial in which the protocol was intended for all 35 patients attended by a study paramedic. However, the results compare two groups of 17 and 18, and the consort diagram indicates allocation to two interventions.

- Describe the two interventions (only one is described in the methods)
- Describe randomization procedures

Results section 4.4 describes the successful measurement of SpO2. It would be informative to report what those numbers are. Perhaps a table could describe the time-line of the SpO2 readings at each milestone in the care. How many subjects at each time point had SpO2 >98% or <94%? Were there any episodes of dangerous hypoxemia? These numbers will determine whether treatment is really different.
Also in section 4.4, the intervention delivery success is not reported. What were the actual flow rates for O2 that were delivered? How many subjects had <10 lpm flow in the titrated group? This is critical to determine if the intervention will actually result in separation of groups, or if all subjects wind up with similar oxygen exposure.

Going forward, automated measurement of oxygen exposure or SpO2 levels will increase data fidelity and reliability. Capturing traces or measurements from patient monitors should be a priority for a larger trial.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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