Reviewer’s report

Title: Predicting life expectancy with a long short-term memory recurrent neural network using electronic medical records

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Reviewer: Christine Fennema-Notestine

Reviewer's report:

The authors explored machine learning approaches using electronic medical record data with the aim to improve the prediction of life expectancy, which would increase likelihood of improved advance care planning. EMR data was included from 1234 deceased patients. The primary comparisons included a) structured baseline information, b) addition of free text (keyword) information to the baseline information, and c) physician performance alone, and the methodological approaches were well-delineated. The keyword model demonstrated higher accuracy for the keyword condition relative to the others, although correct predictions were still low (20% vs 29%). However, the keyword model also reduced the overestimation of the incorrect prediction (31%) relative to physicians (63%). The study is of interest, and the findings intriguing in an exploratory sense. As the authors note, however, the amount of data "is not considered to be a lot of data for training neural networks." Despite that note, there are a number of sub-explorations of conditions. The findings must be taken as exploratory and an emphasis placed on the need to replication and extension of this work in the manuscript. In addition, the background information prior to methods presentation could be reduced and streamlined.

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.

Yes

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

Quality of written English
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