

FLUID BALANCE OR BODY WEIGHT CHANGES AS ROUTINE NURSING ACTIVITY: IS THERE A FAVORITE?

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OBJECTIVES

Positive fluid status has been associated with worse prognosis in ICU. In view of the potential for errors in the calculation of fluid balance (FB) totals and the problem of accounting for insensible fluid losses, measurement of body weight (BW) changes is an alternative non-invasive method commonly used for estimating body fluid status. The objective of present study is to compare the measurements of FB and BW over time and to assess their association with ICU mortality.

METHODS

This prospective observational study was conducted in the 34-bed multidisciplinary ICU of a tertiary teaching hospital in southern Brazil. Adult patients were eligible if their expected length of stay was superior to 48 hours and if they were not receiving oral nutrition. Clinical demographic data, daily and cumulative FB (input minus output) with and without insensible water loss, and daily and total BW changes were recorded. Agreement between daily FB and BW changes, and between cumulative FB and total BW change was calculated.

RESULTS

Study flow chart is displayed below (fig 1). Cumulative FB and total BW change differed significantly among survivors and non survivors - respectively, +2.53L versus +5.6L ($p= 0.012$) and -3.05kg vs -1.1kg ($p= 0.008$). The average daily difference between measured FBs and BW was +0.864 L/kg with wide interval: -3.156 to +4.885 L/kg (fig 2A), which remained even after adjustment for insensible losses (mean bias: +0.288; limits of agreement between -3.876 and +4.452 L/kg) [fig 2B]. Areas under ROC curve for cumulative FB, cumulative FB with insensible losses and total BW change were, respectively, 0.65, 0.56 and 0.65 ($p= 0.14$) [fig 3].

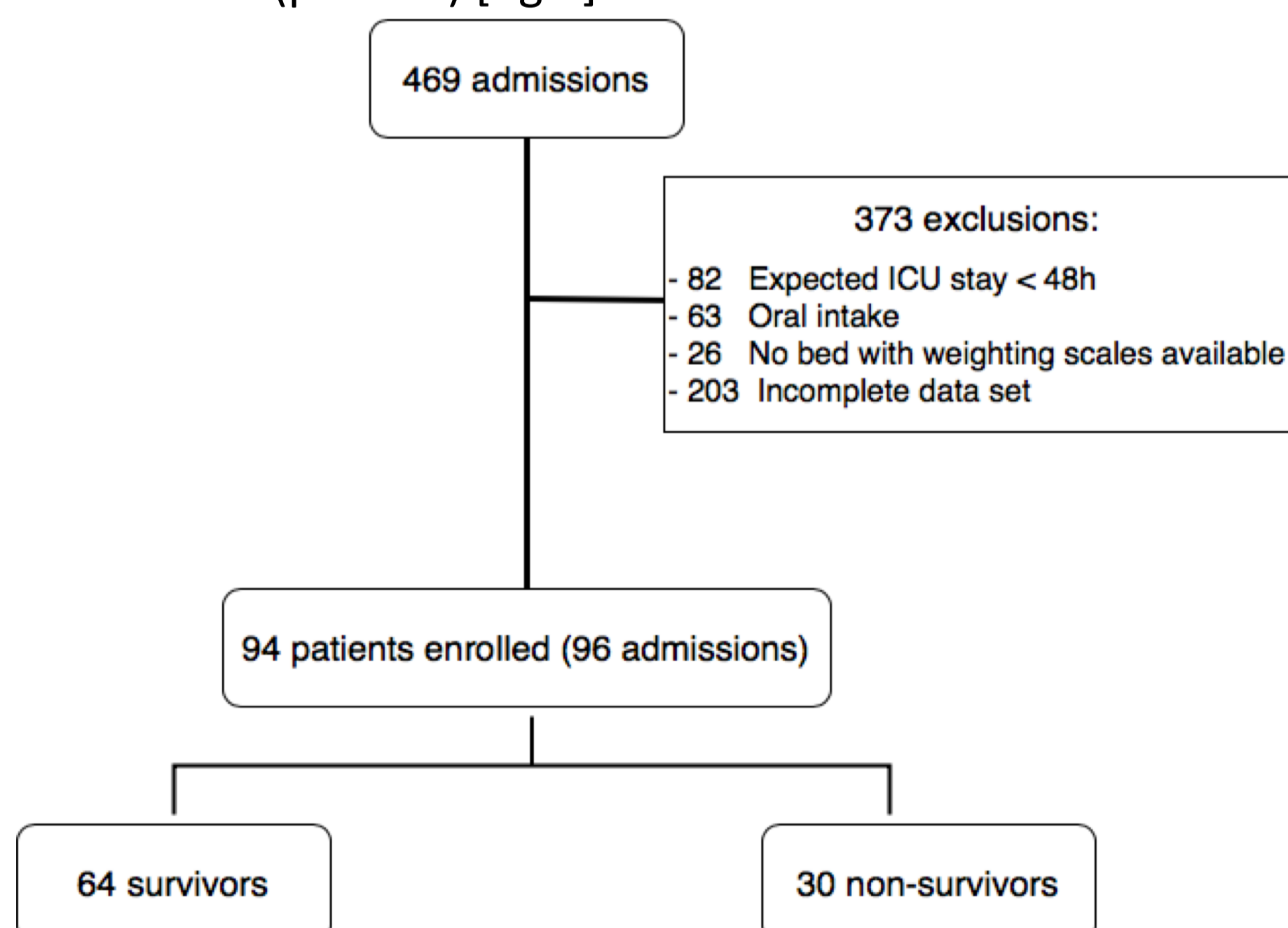


Figure 1. Study flow

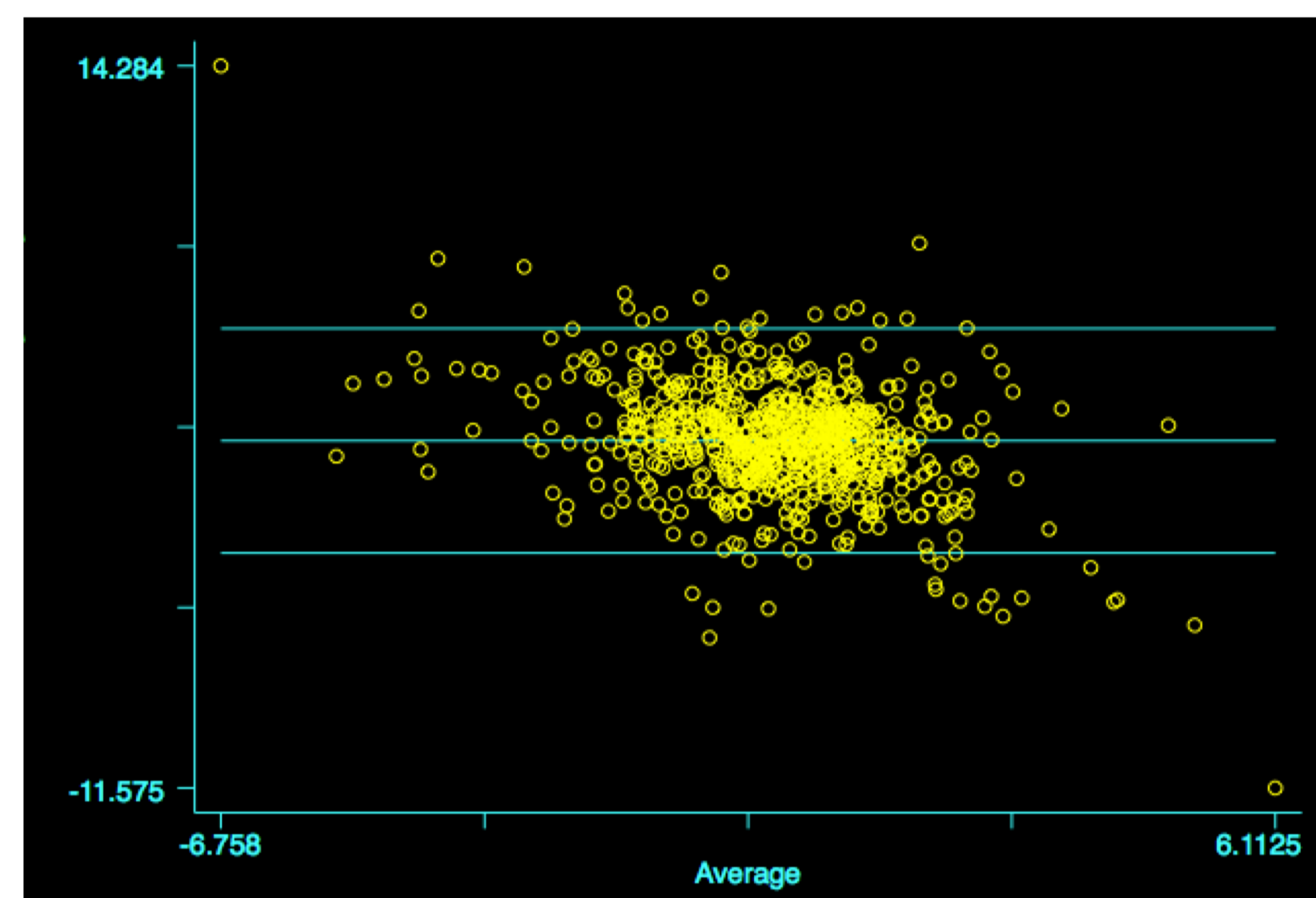


Figure 2A. Daily FB and BW changes.

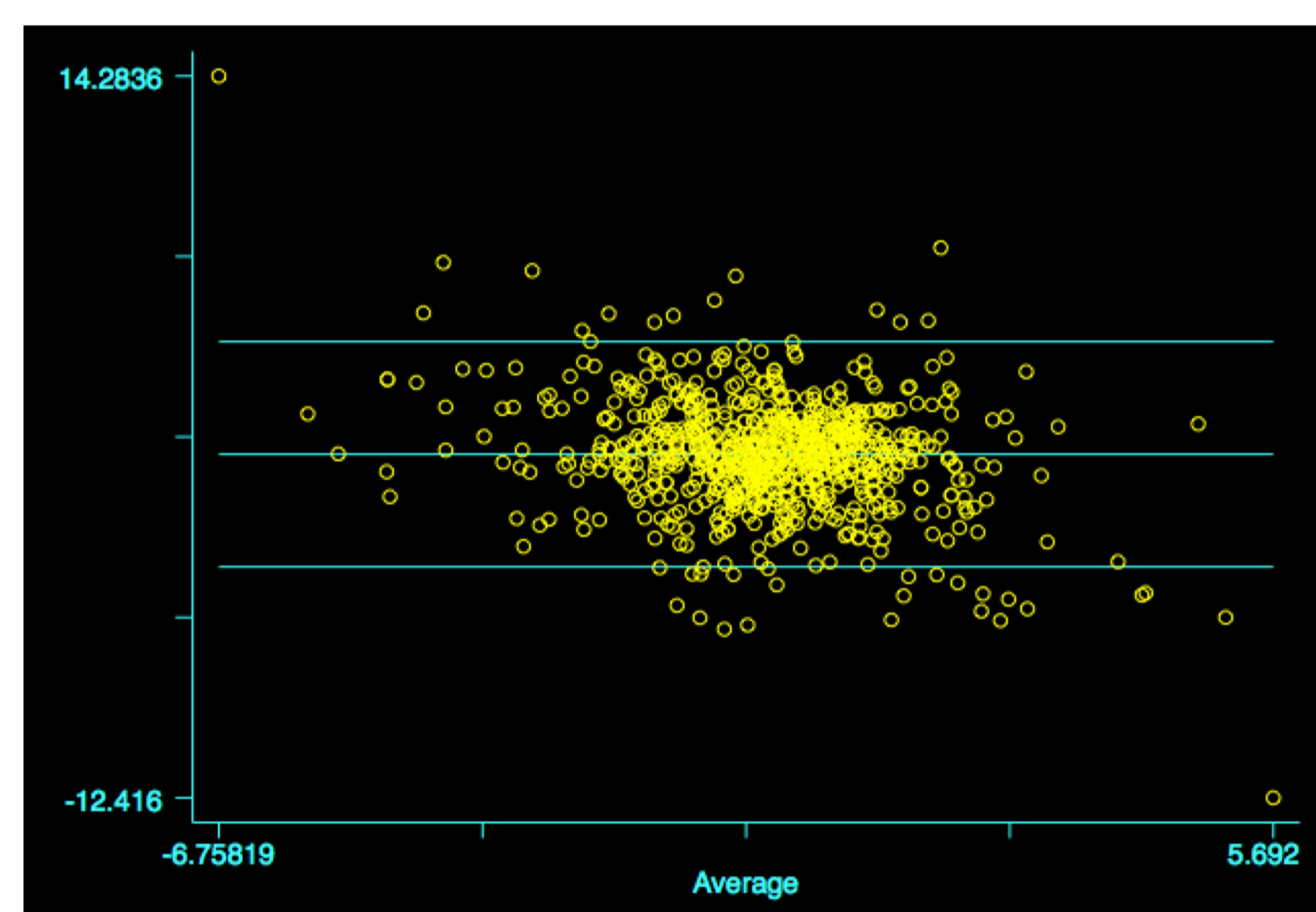


Figure 2B. Daily FB with insensible water loss and BW changes.

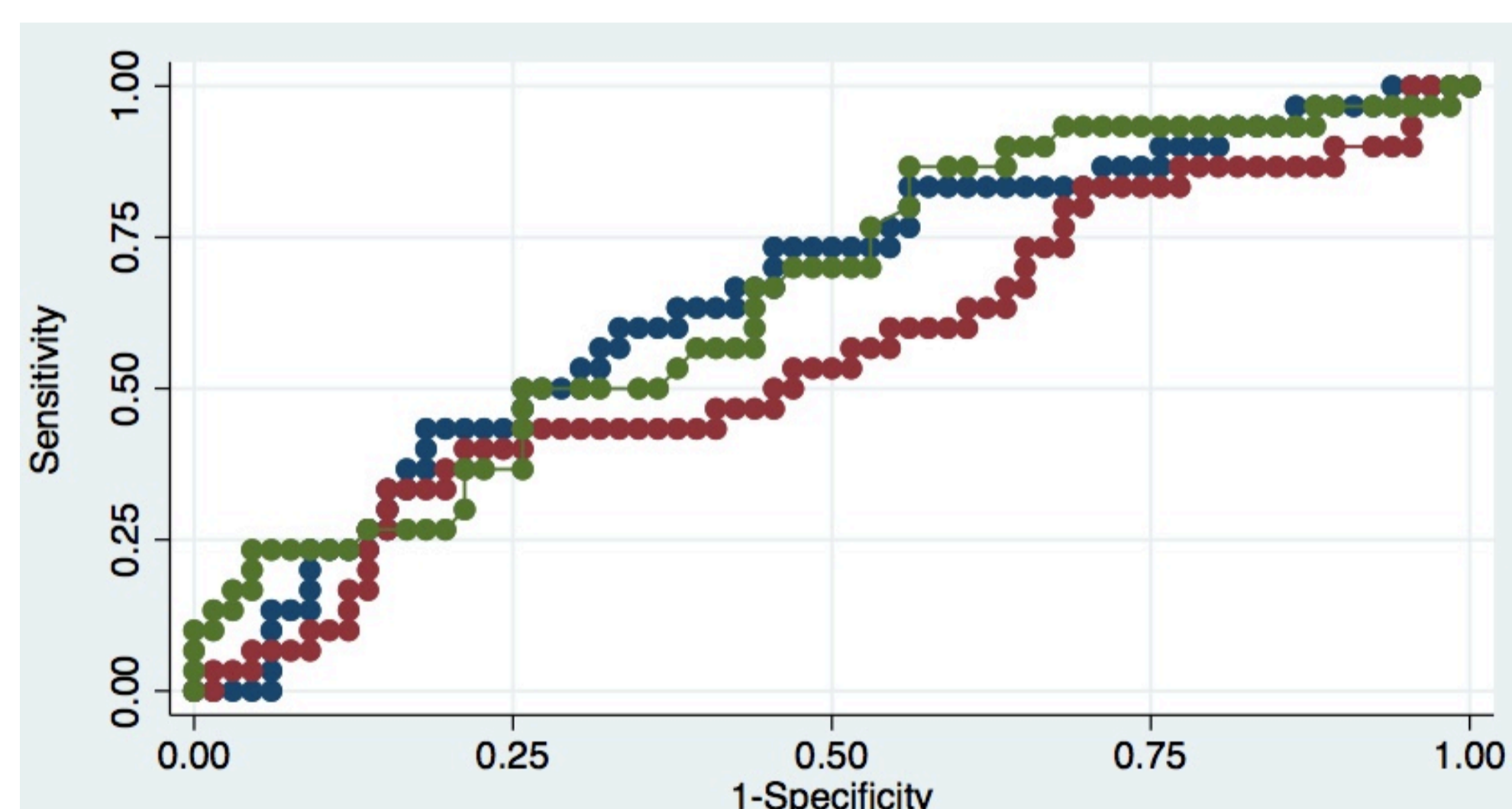


Figure 3. Areas under ROC curve according to ICU mortality.

CONCLUSION

The results of this prospective observational study indicate absence of agreement between FB and BW changes, with greater discrepancy between cumulative FB and total BW change. Both FB and BW changes were significantly different among survivors and non survivors, but neither measurement discriminated ICU mortality even fairly.