Global Muscle Strength, not Grip Strength is Associated with Hospital Length of Stay

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Background

Previous studies have examined the predictive power of grip strength testing in determining fall risk and mortality risk in community dwelling older adults, as well as increased risk for long term post hospitalization functional impairments and mortality in a general ICU population. There is little data on a Surgical ICU population. Additionally, there is question whether grip strength would be an appropriate assessment versus another type of test. Grip strength testing is favorable because it is quick, simple, and well tolerated by patients who are weakened by the condition that necessitated their hospitalization.

Purposes/Objectives

- Goal: determine if grip strength testing is predictive of hospital length of stay and mortality.
- Assess if other tests are more effective than grip strength testing at identifying patients at increased risk for death, increased length of stay, and potentially significant long term loss of function.

Article 1

Table 2: Analysis of factors associated with hospital and SICU length of stay, and mortality

<table>
<thead>
<tr>
<th>Factor</th>
<th>Hospital LOS</th>
<th>SICU LOS</th>
<th>Mortality</th>
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<tbody>
<tr>
<td>Age</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Grip strength</td>
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Lee et al. found in a prospective observational study that the MRC (Medical Research Council) cluster of Manual Muscle Tests proved effective in predicting LOS in the SICU, as well as general hospital LOS and mortality. They found that grip strength had no correlation with either LOS or mortality even though it is correlated with mortality outside of the hospital setting. A standard physical therapy exam involving the 12 MMTs performed at bedside would provide a more effective but more taxing test. In cases where the patient’s hospitalization is planned, it would be worth pre screening so that interventions may be provided immediately to prevent the rapid strength and function loss associated with immobility.

Clinical Significance

- Isolated Grip Strength Testing cannot be used to predict length of stay in the SICU or a hospital rehabilitation ward.
- Global Muscle Strength is predictive of SICU, ICU and hospital LOS as well as mortality.
- The SOMS can also be used to predict LOS and mortality in hospitalized and SICU patients.

Conclusion

- Research needs to be expanded to a wider variety of patients. Current research is largely limited to a caucasian population.
- Larger, more powerful studies need to take place examining grip strength’s appropriateness as a component of assessment or risk factor in determining potential LOS and mortality.
- Is there a ceiling or floor effect with regards to grip strength’s association with length of stay and mortality?

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References: