Statistical Analysis of the Workload on the LVHN Observation Unit

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Twelve hours of observation were conducted on both the Observation Unit (5C) and a comparable Medical-Surgery Unit (7BP).

A set of typical tasks and procedures were identified in order to differentiate between medical value added to a patient and other occupational tasks required of the nurses.

Along with the process identifier, the start and end time of each process, and the room number of the patient involved was recorded. The observed nurses were chosen simply through assignment by the present Charge Nurse of the unit. These observations were performed on 6 nurses in the 5C unit and 4 nurses in the 7BP unit, totaling 24 observed hours and 692 observed processes on 57 patients. The data was then manipulated in many ways in order to run two-sample t-tests through Mintab, a statistical analysis software. This two-sample t-test was chosen because it highlighted the differences between the 7BP and 5C data sets.

Duration of Time Spent Per Patient Care Interaction 5C vs 7BP Summary Report

### Table of results of 20 t-tests. SS=Sample Size. STDV= Standard Deviation. The difference column signifies whether or not the tests showed a conclusive statistical difference between the 5C and the 7BP in the given metric. Note: Numbered comparisons correspond to numbered list in conclusion section.

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Stat</th>
<th>5C</th>
<th>7BP</th>
<th>Difference</th>
<th>p-value</th>
<th>S</th>
<th>#</th>
<th>Difference/p</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Time spent between tasks</td>
<td>S</td>
<td>402</td>
<td>343</td>
<td>676</td>
<td>0.24299</td>
<td>No</td>
<td>SS</td>
<td>1.173</td>
<td>0.711</td>
</tr>
<tr>
<td>2) Percent of observation period spent on one patient’s care</td>
<td>S</td>
<td>36</td>
<td>21</td>
<td>11.3%</td>
<td>0.001</td>
<td>Yes</td>
<td>SS</td>
<td>11.5</td>
<td>2.80</td>
</tr>
<tr>
<td>3) Duration of time spent per patient care interaction</td>
<td>S</td>
<td>27.9</td>
<td>13.7</td>
<td>14.2</td>
<td>0.24</td>
<td>No</td>
<td>SS</td>
<td>16.2</td>
<td>0.744</td>
</tr>
<tr>
<td>4) Duration of time spent per computer work</td>
<td>S</td>
<td>1.15</td>
<td>0.96</td>
<td>0.19</td>
<td>0.003</td>
<td>No</td>
<td>SS</td>
<td>0.71</td>
<td>2.47</td>
</tr>
<tr>
<td>5) Percent of observation period spent on computer work</td>
<td>S</td>
<td>34</td>
<td>26</td>
<td>0.77</td>
<td>0.006</td>
<td>No</td>
<td>SS</td>
<td>1.15</td>
<td>0.74</td>
</tr>
<tr>
<td>6) Percent of total patient care time spent on consultation</td>
<td>S</td>
<td>103</td>
<td>100</td>
<td>3%</td>
<td>0.001</td>
<td>Yes</td>
<td>SS</td>
<td>0.744</td>
<td>2.47</td>
</tr>
<tr>
<td>7) Percent of total patient care time spent on computer work</td>
<td>S</td>
<td>8</td>
<td>20</td>
<td>12%</td>
<td>0.006</td>
<td>No</td>
<td>SS</td>
<td>0.74</td>
<td>2.47</td>
</tr>
<tr>
<td>8) Percent of total patient care time spent on supplies</td>
<td>S</td>
<td>4</td>
<td>No</td>
<td>0.001</td>
<td>Yes</td>
<td>SS</td>
<td>0.744</td>
<td>2.47</td>
<td>Yes</td>
</tr>
<tr>
<td>9) Percent of total patient care time spent on phone calls</td>
<td>S</td>
<td>36</td>
<td>21</td>
<td>7%</td>
<td>0.001</td>
<td>Yes</td>
<td>SS</td>
<td>0.744</td>
<td>2.47</td>
</tr>
</tbody>
</table>

The following can be summarized in regards to the workload on nurses in both units:

1. Both units spend approximately the same amount of idle time in between processes.
2. Nurses in the 5C unit spend a higher percentage of shift time on direct patient care of any given patient than do nurses in the 5C unit.
3. Individual periods of direct patient care in the 7BP unit take more time to conduct than do nurses in the 5C unit.
4. Individual periods of computer work in the 7BP unit take more time to conduct than do nurses in the 5C unit.
5. Individual idle periods in the 7BP unit are lengthier than they are in the 5C unit.
6. Individual periods of nurse consultation in the 7BP unit take more time than their counterparts in the 5C unit.
7. Both units spend approximately the same percentage of shift time on computer work.
8. Nurses in the 5C unit spend a higher percentage of shift time on direct patient care than do nurses in the 5C unit.
9. Nurses in the 7BP unit spend a higher percentage of shift time consulting either a doctor, nurse, patient’s family member, or other employee than do nurses in the 5C unit.
10. Nurses in the 5C unit spend a higher percentage of shift time gathering supplies for a patient than do nurses in the 7BP unit.
11. Nurses in the 5C unit spend a higher percentage of shift time completing patient paper work than do nurses in the 7BP unit.
12. Nurses in the 5C unit spend a higher percentage of shift time on their work cell phone than do nurses in the 7BP unit.
13. Nurses in both units delivered or checked any given patient’s medicine approximately as frequently as each other. This process in itself was performed rarely in both units.
14. Nurses in both units completed any given patient’s computer work approximately as frequently as each other.
15. Nurses in the 7BP unit consulted either a doctor, nurse, patient’s family member, or other employee in regards to any given patient more frequently than did nurses in the 5C unit.
16. Nurses in both units conducted direct patient care on any given patient approximately as frequently as each other.
17. Nurses in the 5C unit completed any given patient’s paper work more frequently than did nurses in the 7BP unit. This process in itself was performed rarely in both units.
18. Nurses in the 5C unit retrieved supplies for any given patient more frequently than did nurses in the 7BP unit.
19. Nurses in the 5C unit completed more phone calls for any given patient more frequently than did nurses in the 7BP unit.
20. The two units share a very similar workload, although the work was completed in different fashions. The general trend of the two units’ work flows are which the 5C unit’s nurses conduct many short tasks more frequently, while the 7BP unit’s nurses conduct longer, less frequent tasks. This is supported by the evidence that each floor was observed for 12 hours, but 437 processes were observed in the 5C unit, while only 250 processes were observed in the latter. However, the average process in 5C unit was completed only lasted 1.65 minutes while the average process in the 7BP unit lasted 2.88 minutes.

For these reasons, it can be concluded that the patient-nurse ratios in the two units should be equal. It is recommended that the 5C OU operate at a 5:1 patient-nurse ratio.