Reducing Falls on the Neurovascular Unit

M. Rand Kaller
Isabelle Pisani

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Purpose
The purpose of this study is to determine if a neuro-specific fall risk assessment tool (SAFR) which addresses the neuro-specific risk factors for falls, would be more effective than the current generalized Morse Fall Risk assessment tool at predicting patient fall risk among CVA patients, in turn reducing the fall rate on the neurovascular unit.

Methods
A retrospective chart audit reviewed all neurovascular unit falls in 2018. Factors considered included diagnosis, age, sex, time of fall, length of hospital stay, BMI, National Institute of Health Stroke Scale (NIHSS) score that measures stroke severity before and after a fall if relevant, and comorbidities. This analysis revealed that the plurality of unit falls (37%) occurred in stroke patients.

A literature review explored factors affecting inpatient stroke patients' fall risks and the strategies implemented to prevent their falls. The Stroke Assessment of Fall Risk (SAFR) tool looks at memory and orientation, impulsivity, hemi-neglect, and mobility and stability with regard to fall risks (Breisinger et. al). SAFR was used as starting point to develop a modified tool to determine neuro-specific fall risks. Physical therapists, occupational therapists, and nurse leaders collaborated with the investigators to develop the modified SAFR. All unit nurses, nursing assistants and other interdisciplinary team members were educated about how to use SAFR.

Two weeks were allotted for training staff on the neurovascular unit and staff in medical-surgical float pool as they work on the neurovascular unit often. Although a competency was not created for SAFR training purposes, completion was tracked. 84% of neurovascular staff and 33% of medical-surgical float staff completed the training during these two weeks. Charge nurses on the neurovascular unit also assisted with real-time training for any nurse unfamiliar with the protocol with the expectation that the nurse begin using the SAFR while providing care that day.

Once SAFR was implemented, all patients admitted or transferred to the neurovascular unit who were on stroke protocol (NIHSS assessments) were enrolled in SAFR and the fall reduction study. A paper copy of the SAFR audit was placed on the patients' room door. A SAFR folder with guidelines for implementation and assessment tool itself, audit sheets for patient bedsides, and door signs was added to an existing file organizer with paperwork relevant to care.

The Morse Fall Risk Assessment (Morse) tool was still used on each shift for all patients admitted or transferred to the neurovascular unit. Patients refusing the listed interventions or refusing assessment in turn reducing the fall rate on the neurovascular unit.

The Morse scale rated most neurovascular unit patients as high risk: 30 (83%) high risk, 6 (17%) medium risk and 0 low risk, as shown in Table 1. The SAFR showed a greater distribution with 3 (10%) patients high risk, 15 (48%) medium risk, and 12 (42%) low risk. The differentiation of medium to high risk patients was statistically significant, with a Chi-square = 36.15 and p<0.0001.

In the ten-week timeframe studied of 2018, the 7 (58%) of 12 falls were stroke patients. The same time period in 2019 included half the number of falls, 6, of whom 3 (50%) were stroke patients as shown in Figure 1. Note, neither of these patients had the SAFR form and neither received targeted fall prevention.

Though the point allocation is more strongly weighted within the SAFR tool, the NIHSS (National Institute of Health Stroke Scale) measuring the severity of a stroke also grades hemi-neglect and orientation, making some correlation of these scores to be inevitable. When drafting this study, the hypothesis was that there would be a particular target range of patients with certain NIHSS scores that would be most likely to fall, scores in the middle ranges where deficits were severe enough to impede mobility but not so severe as to prevent the attempt to ambulate altogether. In the initial audit, patients who fall primarily had NIHSS scores between five and twelve. Patients within that range did routinely fall in the SAFR range of medium risk. However, the largest solo indicator of being in the high-risk range was impulsivity, which could not be appropriately audited for.

Even if the SAFR imperfectly gauges a patient's risk, it begins a dialogue on the unit. The nature of this study brought together nurses, nursing assistants, and therapists in a collaborative effort to discuss what really causes falls within their home unit. A tangible paper at bedside and a sign make a larger statement and require more consideration in real time than information in medical record that may not be looked at by each caregiver interacting with the patient.

The limits of this study lie primarily in the small sample size. Patient falls, and resultant data about decreasing fall risks will become more challenging as the number of falls decreases. Despite the vanishingly small pool of data, an important trend has arisen that is worthy of further investigation in the available data. Falls on the unit are significantly decreasing. The next step is validating that this tool is worth that attention, and editing it to improve its function and accuracy.

Perhaps other populations can benefit from also adapting tools to their specific needs and the deficits of their populations. Through increased time and study, perhaps it can be shown that there is statistical evidence that it can result in this kind of difference and keep patient on their feet.

References

Table 1. Comparative Fall Risk Ratings: Morse vs SAFR

<table>
<thead>
<tr>
<th></th>
<th>Low Risk</th>
<th>Medium Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morse</td>
<td>0</td>
<td>6 (17%)</td>
<td>30 (83%)</td>
</tr>
<tr>
<td>SAFR</td>
<td>13 (42%)</td>
<td>15 (48%)</td>
<td>3 (10%)</td>
</tr>
</tbody>
</table>

Discussion/Conclusions
The number of falls on the neurovascular unit during the study period was half of that of the same period the previous year, resulting in the lowest number of falls for over a year. SAFR differentiates the risk levels of the patients using information associated with fall rates in stroke populations, resulting in a smaller target of high fall risk patients than Morse. It is possible that other unit changes also contributed to the decline in fall rate, including the unit rounding to a single location after being divided into two locations for over a year, and the implementation of Remote Visual Monitors.

The Morse scale scored nearly the entire population as high fall risk, which results in reduced ability to triage resources and target care to the patients with the greatest needs and can result in alarm fatigue, increased injury rate, and other consequences. The stroke population is particularly vulnerable to falls. The SAFR, which assesses specific fall risks for stroke patients, and differentiates between risk levels, which is the first step of prevention. As a result, it is possible to allocate resources to the patients at the highest risk.