The Challenge

A focused review of all unplanned Surgical Intensive Care Unit (SICU) admissions in the Trauma Registry 1/2012-4/2016 of a Level 1 trauma center was performed in response to an unplanned return to SICU of a geriatric trauma patient who died after an aspiration event on the floor in 2015. There were 24 patients with 26 unplanned SICU admissions over that 52 month period, of whom 7 patients died. (Table 1) There was a marked increase in 2014 coincident with a 30% increase in trauma admissions. While a few of the 24 patients were unique and isolated events, two recurring conditions were identified: dehydration and respiratory compromise. The etiology appeared to be the same as that identified by Doreen Norton, R. N. in 1962 (1): “The exceptionally low intake... appears to be comparable with regards to demographics, mechanism of injury, Comorbid conditions, ISS, and RTS. As compared to the pre-SPA group, who were managed in a standard floor setting after surgery, the SPA group had statistically significant reductions in unplanned SICU admissions (8 vs 1; p=0.0377); severe sepsis (6 vs 0; p= 0.0305); and urinary tract infections (13 vs. 0; p=0.0002). The pre-SPA population of 117 patients experienced 7 deaths, while the SPA group of 105 patients had only 1 (p=0.0686).

The Intervention

Based on detailed chart review of the unplanned ICU admissions, we identified four pillars upon which to build an intercession: Cognition, Nutrition, Respiratory, and Mobilization, all of which were addressed with multiple interventions, many of which overlapped. All require the delivery of attention at the bedside. The Surgical Post Acute Treatment Unit (SPA) achieves this by clustering the unique population in a 6 bed unit without cardiac monitors supported by one Registered Nurse and 2 Patient Care Assistants chosen specifically for their affinity for working with elderly patients. Clinical medical management is provided by the SICU Attending and Resident team in the SPA as it is in the SICU, and overseen by the Trauma Program.

Cognition was addressed with environmental changes (color painted walls, bright illumination with LED lights, frequent interactions with staff, night time quiet and low lighting to encourage sleep, avoidance of opioids and benzodiazepines). Nutrition was addressed by tracking all oral intake, supplements, and assistance with meals. Respiration was addressed by out of bed, ambulation, incentive spirometry, and respiratory therapy. Mobilization was addressed by daily physical therapy supplemented by the SPA staff, and occupational therapy when warranted.

Effects of the Intervention

A registry was created to track all SPA admissions. A retrospective review was then performed on the specific subgroup of patients aged 70 and above with hip fractures, comparing the 117 patients during the last six months of 2014 before the SPA was opened (Pre-SPA group), to the 105 patients who were managed in the SPA after their surgery during the last six months of 2016, after the SPA had been established (SPA group).

The Pre-SPA and SPA populations were compared and found to be comparable with regards to demographics, mechanism of injury, Comorbid conditions, ISS, and RTS.

As compared to the pre-SPA group, who were managed in a standard floor setting after surgery, the SPA group had statistically significant reductions in unplanned SICU admissions (8 vs 1; p=0.0377); severe sepsis (6 vs 0; p= 0.0305); and urinary tract infections (13 vs. 0; p=0.0002). The pre-SPA population of 117 patients experienced 7 deaths, while the SPA group of 105 patients had only 1 (p=0.0686).

Sustain

The SPA is a semi-closed surgical unit that has specific admission criteria. The SPA opened in May 2016. For the remaining 7 months of 2016, there were a total of two unplanned surgical admissions to the SICU from the floor, none from the trauma service. There were a total of 245 patients placed in the SPA over the same time period regardless of diagnosis, of whom five (one hip fracture patient) had unplanned transfers from the SPA to the SICU: Three for more aggressive pulmonary toilettte for excessive secretions and one for neurologic monitoring for a transient change of mental status. The hip fracture patient had a ST-elevation myocardial infarction and died 2 days later.

We do not view these SPA to SICU transfers as failures, however, but instead the SPA achieving one of its goals: Early identification of potential complications. We believe, prior to the SPA, these patients would likely not have been recognized as in distress until their condition had deteriorated to a life-threatening state.

REFERENCES


A Surgical Post-Acute treatment unit (SPA) to optimize care of elders with hip fractures

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A view of the SPA with the daytime lighting

A view of the SPA with nighttime lighting

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