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Physical Restraint in Critical Care Settings: Will They Go Away?

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Abstract

The critical care setting is perhaps the last major health care setting in which physical restraint remains a common, and oftentimes unquestioned, practice. This is despite the numerous regulations and accrediting standards that have limited or even eliminated practitioners' use of physical restraints in other health care settings. The decision to use physical restraint in the care of critically ill patients can be complex and is influenced by characteristics of the patient, the practitioner, and the environment. What do we know about physical restraint practice in critical care settings, and what steps must we take if we are, indeed, to become "restraint-free" environments?

How Common Is Physical Restraint in Critical Care?

In a recent observational study in 40 acute care hospitals in 6 cities, we conducted rounds on every nonpsychiatric unit (n 5 434 units) between the hours of 5 and 7 a.m.[1] We used the definition of physical restraint from the Centers for Medicare and Medicaid: "any manual method or physical or mechanical device, material or equipment attached or adjacent to the patient's body that the person could not remove easily and that restricted freedom of movement or access to the body."[2] Types of restraints included wrist restraints, mitts, elbow immobilizers, belts, vests, and leg restraints. For the purposes of this article, full side rails are not included. On the basis of 155,412 patient-days, we found the overall hospital rate was 50 restraint days/1000 patient-days. This means that approximately 27,000 people are physically restrained every day in U.S. hospitals. Hospitals varied substantially, however, in how frequently physical restraints were used, from a very low rate of 4.7 to a high of 94 restraint-days/1000 patient days.

Intensive care units (ICUs) accounted for 56% of all restraint days despite having only 16% of all the patient-days. Thus, individual ICUs have much higher rates than when including all patient beds for calculating the overall hospital rate. Similar to the overall hospital figures, there was marked variation among ICUs. First, ICUs varied in restraint by the type of ICU. Pediatric intensive care units had the lowest overall rate of 50.6. Among the adult ICUs, the coronary care units had an overall rate of 98.9, followed by 179 for medical ICUs (MICU), 220 for surgical ICUs (SICUs), and 268 restraint-days/1000 patient-days for neurology/neurosurgery ICUs. Closer examination within a type of ICU also showed

marked differences. For example, rates within the MICU ranged from a low of 87 to a high of 371, a 4-fold difference. Similarly, SICU rates ranged from 81 to 438, a 5-fold difference.

What Influences ICU Clinicians' Use of Physical Restraint?

Whereas ICUs overall accounted for less than one fifth of the hospital beds, they accounted for more than half of all restraint use; however, considerable variation exists in the use, even within similar types of ICUs. What could account for this variation within and between ICUs?

Patient Population

The characteristics of the patient appear to influence the decision to use physical restraint given that the type of unit (e.g., adult medical vs. coronary care) had differences in overall rates of use. For this large population-based study, we were able to collect data on the patient's age, sex, and whether he or she was mechanically ventilated. Men were more likely to be restrained than women, but no differences were noted by age. Ventilation days were modestly correlated with restraint days, but the hospital differences were large: the percentage of ventilated patients who were restrained varied from only 10% to 92%.

ICU Resources and Processes of Care

Perhaps the variation in practice can be explained by variation in the number and kind of health care personnel who staff the ICUs. We examined more than 100 administrative and environmental variables among 55 of the ICUs at 39 of the hospitals.[3] The ICUs did not differ in nurse-to-patient ratios. However, other resources did vary, and the ICUs could be grouped or clustered into 1 of 2 groups: those with more resources beyond that of nurse labor versus those with less. When put into a regression model, the type of ICU (resource rich vs. resource poor) explained only 5% of the variation in restraint use beyond that explained by ventilator days. In other words, the variation in restraint use for these ICUs could not be explained by the nurse-to-patient ratio because they all had almost exactly the same ratio, nor could it be explained by whether other personnel (such as respiratory therapists) were also available.

ICU processes of care are known to differ. For instance, the pediatric ICUs all had accommodations to allow and encourage family to stay at the bedside 24 hours a day. Few adult ICUs had the same processes in place. The type and actual use of sedation and analgesia protocols or weaning protocols varied considerably among the ICUs. At the time of the study, none systematically assessed for delirium in patients, another known risk factor for physical restraint.[4] Thus, processes of care as well as resources may very well affect whether a nurse chooses to use physical restraint.

Nurse-Specific Factors

Some have suggested that nurse-specific factors, such as age, years of experience, and education, influence the nurse's decision to use physical restraint. To date, there have been no conclusive findings on these factors.

The Intertwining of Physical Restraint and Patient-Initiated Device Disruption (PDD)

No discussion regarding physical restraint use in critical care can be complete without acknowledging the major concern of critical care personnel: that the absence of physical restraint will result in patients' premature disruption or termination of life-sustaining therapies or such disruption could cause significant damage to the patient. Thus, ICU nurses primarily use physical restraints to maintain the patients' devices and therapy, such as endotracheal tubes, central lines, and arterial lines. Interestingly, studies of single devices (e.g., endotracheal tubes) and multiple devices have demonstrated the high failure rate of physical restraints. Up to 74% of patients are physically restrained at the time of device disruption. [5,6] Moreover, few patients suffer serious or life-threatening harm as a result of PDD.[5] Given that more than half of all physical restraint use occurs in ICUs, reducing PDD by means other than physical restraint would reduce the majority of physical restraint in the United States.

Recommendations

Our challenge is to identify preventive interventions that also minimize reliance on restraint in critical care settings. Although results are still inconclusive, a growing body of knowledge is available to help us bundle activities that would reduce PDD and physical restraints. Any decision a nurse makes, whether to use restraint or nonrestraint strategies, will result in an outcome: patient condition worsens, patient condition improves, or no change in condition. We know from numerous case reports that the use of physical restraint results in harm to the patient, including increased agitation, new-onset delirium, and death. In weighing the risks of harm from physical restraint to the perceived benefit of the restraint (remember, the majority of patients who disrupt or remove their devices are in physical restraint at the time of the event), the nurse must do the following. First, determine the probability that this particular patient will disrupt his or her therapy (low, moderate, high). Then determine the level of actual harm that may happen to the patient if premature termination of the device occurs. For example, what is the level of harm if a patient pulls out a peripheral intravenous (IV) line versus an endotracheal tube? The level of harm for a peripheral IV does not necessarily outweigh the potential harm (e.g., delirium) from the physical restraint. Patients who are judged to have low to moderate probability of terminating their devices and whose harm is likely to be low to moderate do not warrant physical restraint.

A growing number of studies have been conducted on delirium, agitation, enhanced communication, judicious use of sedation and analgesia, weaning protocols, and tube anchoring techniques in critical care settings. As we continue to focus on behaviors that lead to PDD, we will find successful strategies, whether aimed at the environment, our practices, or the patient.[7,8] In turn, we reduce our reliance on physical restraints and thus minimize the known adverse consequences of involuntary immobilization. We know from our study that a number of ICUs had either no restraint use or very little. We also know that in the United Kingdom and several other European countries, physical restraints are not used in ICUs, and these countries report outcomes similar to those of the United States.[9,10] We call on ICUs

that have successfully lowered their physical restraint use to share their best practices, innovative approaches, and quality improvement projects.

Biographies

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