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Designing a Postepidural Fall Risk Assessment Score for the Obstetric Patient

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The effects of an epidural combined with the need for early ambulation in the postpartum patient create a high risk for falls. We developed a standardized assessment score, based on 8 areas of assessment, to evaluate the fall risk of a postepidural patient. This score was developed using 2 other assessment tools, as well as considering the unique issues associated with the postepidural patient. The scoring system is user-friendly and applicable to the labor and delivery setting. **Key words:** *fall risk assessment score*, *falls*, *labor and delivery*, *postepidural*

THE JOINT COMMISSION has issued a set of National Patient Safety Goals that include reducing the risk of patient harm resulting from falls. The focus of those goals is to require organizations to implement a fall-reduction program with an evaluation that is appropriate to their population, setting, and services.[1] To meet the goal of reducing the risk of patient harm, an institution should conduct a fall survey and initiate a falls-prevention task force.[2]

The reduction of falls is important not only for medical-surgical units but also for other units, especially labor and delivery. However, a literature review revealed no information about studies on the risks of falls for the obstetric population. One study even excluded obstetrics because it was not considered a "high risk" area.[3] There are several popular fall risk assessment tools currently available for the older adult, such as the Morse Fall Scale,[3] Heindrich II Fall Risk Model, St Thomas Assessment Tool in Falling Elderly Inpatients,[4] Care Dependency Scale,[5] and Spartanburg Fall Risk Assessment Tool.[6] There appear to be no tools specific for women in the immediate postpartum period who are attempting to walk for the first time after the delivery. Many existing tools lack sensitivity and specificity.[4,6] There is no evidence that the available tools are appropriate for predicting falls for postpartum patients.

DEFINING THE PROBLEM

The term *fall* can be interpreted differently, and therefore, it is important to delineate a definition of what a fall is and what it entails. The Nursing Research Committee at Children's Hospital in Central California defined a fall as a sudden and unexpected descent from a standing, sitting, or horizontal position. A fall includes slipping from a chair as well as a guided fall (where an individual guides the falling individual to the floor) with or without injury to the patient.[7]

Not only has the practice of obstetric anesthesia changed remarkably in a relatively short time, but epidural anesthesia also has become a more widespread method of pain control in the laboring woman. The history of the

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epidural began with a 1-time injection of medication into the epidural space for pain control. Epidurals have evolved to a continuous infusion of medication through tubing, which is attached to the epidural catheter, placed on a pump, and then programmed by anesthesia. This is called patient-controlled anesthesia.[8]

Currently, the practice of obtaining an epidural for a laboring mother occurs ideally when she enters the active phase of labor. The epidural is usually kept running until after the placenta is delivered and any perineal repair is completed. Epidurals are not without the possibility of complications, such as motor block, numbness, pruritus, hypotension, nausea, and vomiting.[9] The hypotension is especially critical in a postpartum mother because the average estimated blood loss is 500 mL with a vaginal birth and 1000 mL with a cesarean section, which potentiates hypotension.[10,11]

Research has suggested that multifaceted interventions involving patient assessments in various areas aid in the reduction of falls.[2] After an epidural, regional anesthesia that blocks nerve impulses from lower spinal segments needs to wear off for the patient to ambulate. Every person does not recover from an epidural in the same manner, although recovery following an epidural is predictable. Many falls can be prevented through appropriately targeted assessment and interventions.[12] However, little to no evaluation is made to assess the risks of falling following epidural anesthesia. There are ways to assess a patient prior to ambulation to prevent falling; the patient receiving regional anesthesia should show signs of resolution from both sensory (feeling) and motor (moving) blockades.[13]

After delivery of the baby, there are multiple reasons for the nurse to assist the patient in ambulating. One of the primary reasons is to void. If the patient is able to void, the risk for increased postpartum bleeding and hemorrhage decreases dramatically. Women who have had an epidural, however, may be at risk for urinary retention and subsequent bleeding.[14]

Another reason that a postpartum patient may need to ambulate sooner than anticipated is to move to a different room. The room in which the mother delivers may not be the room that she will stay in until discharge. This is especially true in hospitals with separate units, such as labor and delivery and postpartum. A new mother is typically transferred to a postpartum room within a few hours following the delivery.

When a baby is born with needs that require transfer to a special care nursery or the neonatal intensive care unit, the new mother may only briefly see her infant. If infant transfer to a higher-level facility is necessary, these mothers face an earlier ambulation period, so they may accompany or see their infant before transfer.

We assess patients for risk of falls on admission to labor and delivery, using the Morse Fall Scale.[3] During the recovery after obstetric anesthesia, we use the Modified Aldrete Score, which measures recovery from anesthesia and includes gauging consciousness, activity on command, respiration, oxygen saturation, and circulation.[15] Even the Modified Aldrete Score, though, does not address several important details in recovering maternal patients. When asked whether she can move her legs and the patient moves only her feet, by default she gets the higher score. However, this does not assess her ability to stand. By eliciting specific, relevant information from both the Morse Fall Scale[3] and Modified Aldrete Score,[15] a more thorough risk assessment of postanesthesia falls can be obtained.

HOW THE AUTHORS DEVELOPED THE POSTEPIDURAL FALL RISK SCORE

During a monthly staff meeting, we were given an in-service on a new hospital policy of putting red socks on every patient who was at an increased risk for falling. Almost all the staff nurses said in unison, "All of our patients are at a higher risk for falling." After a lengthy discussion among the staff, we decided that was not the best approach for our patients, and we searched for the current evidence on falls among obstetric patients. An extensive literature review was done, and we did not identify

Table 1. The Post Epidural Fall Risk Assessment Score

		Points	Score
History of an epidural and/or a fall	No	0	
	Yes	20	
Hours since epidural turned off	>3	0	
	>2	10	
	>1	20	
Able to lift legs, feet, and bottom off bed unassisted	No	20	
	Yes	0	
History of opioid medication administration before or after delivery	No	0	
	Yes	10	
History of unstable BP (change in BP >20 mm Hg)	No	0	
	Yes	10	
Preexisting illness (eg, diabetes, preeclampsia)	No	0	
	Yes	10	
EBL >500 mL for SVD and 1000 mL for C/S	No	0	
	Yes	20	
Test stand: can bend knees without buckling	No	20	
	Yes	0	
		Total score	_____

Abbreviations: BP, blood pressure; C/S, cesarean section; EBL, estimated blood loss; and SVD, spontaneous vaginal delivery.

a falls risk assessment scale that was appropriate for the postepidural, postpartum patient.

To meet this need, we developed the Post Epidural Fall Risk Assessment Score (PEFRAS) (Table 1). The score was based on the Morse Falls Scale[3] and Modified Aldrete Score[15] and also considered the most common problems associated with ambulation after delivery. PEFRAS is designed specifically for use with the postepidural, postpartum patient and assigns point values in 8 different areas to identify their risk for falls.

The higher numbers were chosen by the authors so as not to confuse this scoring system with other existing scales. If the patient's risk factors equal or are greater than 50 points, then documented steps should be taken to prevent falls and appropriate nursing care plans and orders should be implemented. These steps may include inserting a urinary catheter or using a bedpan for voiding, reassessing the patient within 30 minutes to 1 hour, or considering alternative transfer methods such as a wheelchair or gurney.

The first step of assessment in PEFRAS is reviewing the patient's history of previous epidurals, falls, or both. If patients have a history of a fall, they are at increased risk of falling again.[1] Women who have had an epidural before are familiar with the sensations in the lower extremities and may try to walk without any help for the first time.

The second step of the assessment is to determine how many hours have elapsed since the delivery, and when the epidural pump was turned off. A typical epidural that contains fentanyl and ropivacaine or bupivacaine has a half-life of approximately 3 to 6 hours for ropivacaine and 3.5 hours for bupivacaine. Duration of either drug combination is approximately 2 to 6 hours.[8] As a result, the longer the nurse waits to ambulate the patient after turning off the epidural, the less chance the patient has of falling.

The third step is to assess the patient's ability to bend both knees, place both feet on the bed, and lift her buttocks off the bed unassisted. This is a key factor in identifying if the

patient is still experiencing motor blockade from the epidural. The nurse can assess leg stability and strength when doing this maneuver. If one leg is affected more than the other, it will be apparent at this time.[11]

The fourth step in PEFRAS is to evaluate the use of medications such as opioids, which may have been given before or after delivery, and the amount of time since receiving those drugs. Studies have shown that some medications increase the likelihood of a fall.[1,3,6] Commonly given intravenous opioids in labor include nalbuphine (Nubain), which has a half-life of 5 hours, and fentanyl, with a half-life of $1^1/_2$ to 2 hours.[16]

The fifth step in the patient assessment is to monitor blood pressure. Unstable blood pressure due to decreased circulating blood volume is another risk for falling, especially following the delivery of a baby.[11,13,14] Considering the guidelines for assessing circulation in the Modified Aldrete Score, if a patient's blood pressure is $\pm$20 mm Hg from her baseline, this may be an indication of an unstable blood pressure and may place the patient at a higher risk for falls.

The sixth step in PEFRAS is to evaluate the patient's estimated blood loss. This loss of blood not only potentiates unstable blood pressure but also increases the chance of the patient's developing hypovolemia, which is another risk factor for falling.[13] Blood loss is only an estimate at the time of delivery, but if it exceeds what is considered normal limits for the patient's type of delivery, the nurse can anticipate the lower blood volume to potentiate effects of hypotension and hypovolemia.[11]

The seventh step in the assessment phase is to evaluate any preexisting conditions, such as diabetes mellitus, preeclampsia, and dehydration. Patients with diabetes mellitus may have lower limb peripheral neuropathy, increasing their risk for falling. If the patient with preeclampsia has been receiving magnesium sulfate therapy for 12 to 24 hours after the delivery, this may have an effect on her ambulation because of the smooth muscle relaxant properties of the drug.[16]

The eighth and final step in the assessment is to determine the ability of the patient to stand unassisted at the side of her bed, slightly bend both knees simultaneously, and return to the standing position with knees locked. At this point, if the patient is unable to maintain balance, she can be eased safely back into a sitting position on the bed, with no adverse outcomes.

SUMMARY

After reviewing multiple fall risk assessment tools, PEFRAS was developed for use with the postepidural, postpartum patient. The score was designed to help nurses assess patients' readiness for ambulation after epidural anesthesia. This assessment score integrates important aspects of the Morse Fall Scale[3] and also the Modified Aldrete Score.[15] The simplicity of the assessment enhances its use by nurses. Research on the validity and reliability of PEFRAS, however, is needed. By reducing falls, we are able to build patient and staff satisfaction, create a safe environment for obstetric patients, and at the same time increase institutional compliance with the National Patient Safety goal of reducing the risk of patient falls.

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