Balancing Family Bonding with Newborn Safety

INTRODUCTION
Maternity units in healthcare facilities promote close interaction between families and their newborns to encourage the bonding process. However, newborns may be unintentionally injured while in the care of their families soon after birth. Exhausted family members may not contemplate the possibility of a fall, bump to the head, or other injury occurring while their newborn is placed in their care.

The challenge for maternity units is to promote a close interaction between families and their newborns while ensuring safety. Reports submitted by Pennsylvania hospitals to the Pennsylvania Patient Safety Authority through its Pennsylvania Patient Safety Reporting System (PA-PSRS) over a nine-and-a-half year period were analyzed for events that occurred while newborns were in the care of their families.

Falls were the most common events affecting newborn safety. The study and reporting of newborn falls is a relatively new topic of concern; therefore, limited publications are available. Two published statistics of in-hospital newborn falls rates estimate nationally that 600 to 1,600 newborn falls occur annually. Many of these falls can result in emotional stress to the family as well as harm to the newborn. Literature shows that healthcare facilities can make a difference in newborn events by incorporating prevention methods such as family awareness, staff monitoring, and education for both staff and families.

METHODS
Authority analysts identified 288 newborn events from PA-PSRS using terms associated with newborn safety (e.g., “fall,” “drop,” “bump,” “asleep,” “unresponsive”). The PA-PSRS database was queried for events reported from July 2004 through December 2013 involving newborns ≤30 days old. Analysis of events focused on newborns who were in the care of their families.

Analysis revealed that newborn events included falls, bumps to the head while being held or transferred, and events in which the newborn was found unresponsive.

RESULTS
Types of Newborn Injuries
Of the reported occurrences, newborns fell in 272 events, the head was bumped or struck by an object in 14 events, and the newborn was found unresponsive in 2 events. Of these 288 events, 9.4% (n = 27) were reported as Serious Events resulting in harm to the newborn.

Fall event types. Of the 272 newborn fall events reported, 55.1% (n = 150) of the falls occurred after a family member fell asleep in a bed or chair. Examples are as follows:

Upon entering the mom’s room, the nurse found a man crying and holding a crying infant. Mom stated she was sitting in the chair feeding the newborn when she fell asleep. The infant slid to the floor off of [the mom’s] lap. Mom stated the newborn’s head was hit on the right side.

Infant was sleeping on father’s chest in chair at side of bed; father fell asleep, and infant rolled to the floor facedown. Infant found crying in father’s arms. [Infant] returned to nursery for assessment by pediatrician. No apparent injury.
The following examples illustrate the second most common fall type, classified as “Newborn slipped out of arms while family member was lying, sitting, or standing”:

- Infant fell from mother’s arms when mother bent over to pick something up from the floor.
- Mom brought baby to the nursery in the morning. Mom stated that she dropped the baby onto the floor while changing breastfeeding position. Mom was sitting in her bed. Baby fell and hit back of head.

Other examples of newborn fall events are as follows:

- Newborn rolled off family member’s lap:
  - Mother rang call bell and stated that she wanted nursing to come check the baby, as she dropped the baby on the floor. Mother had been holding baby while in bed. Mother stated that she was trying to get out of bed and the baby fell from her left arm.
  - Mom called via call light to nurse and asked nurse to come into her room. Nurse entered room with mom standing holding her baby next to chair, and [mom] stated to nurse, “I was getting up from the chair holding the baby, and I dropped [the newborn] on the floor”.

- Newborn slipped out of arms:
  - Infant fell from mother’s arms, landing on right side of head and body.
  - Infant taken to NICU [neonatal intensive care unit]. Infant sustained bone skull fracture and small subdural hematoma.

- Newborn fell from mother’s arms while family member was lying, sitting, or standing:
  - Newborn rolled out of hospital bed or isolette:
  - Family member dropped newborn while transferring:
  - Newborn rolled off family member’s lap:
  - Unknown

Of the 272 newborn falls, 8.5% (n = 23) were classified as Serious Events that resulted in harm to the newborn. Injuries reported to the Authority included various types of skull fractures (e.g., parietal bone fracture), subdural hematoma, and subarachnoid bleed. Examples of reported Serious Events are as follows:

- Family member fell asleep in bed or chair:
  - Mother was going to give the baby a bath in the bathroom. The telephone rang. Mother went to answer the telephone and bumped the parietal area of the baby’s head on the door frame while carrying the baby to answer the telephone. CT [computed tomography] scan of the head revealed nondepressed fractures of the right and left parietal bones.

- Newborn found unresponsive:
  - Two Serious Events were reported in which the newborn was found unresponsive by the hospital staff and in which a fall or bump to the head did not occur.
  - In one event, the mother was breastfeeding while sitting in a chair. The nurse checked on the mother 10 minutes later and found the baby blue and unresponsive. The mother was asleep. The newborn’s face was described as being completely covered by the mother’s breast.
The newborn was placed on a ventilator and transferred to another hospital.

In the second event, the newborn was brought to the mother for breastfeeding. The mother fell asleep with the newborn in the bed. Sometime later, the mother called the nurse, who found the baby blue and unresponsive. Resuscitation efforts were unsuccessful.

**Pennsylvania Rate of Newborn Falls by Year**

The average length of stay in days for women who have given birth in all United States hospitals is 2.7 days. Of the 272 falls, 85.3% (n = 232) occurred when the newborn was younger than four days old. Of these 232 newborn falls, 42.7% (n = 99) occurred on day one and 32.8% (n = 76) occurred on day two. See the Table for the rates per year.

By taking the total number of falls reported through PA-PSRS that occurred while a newborn (≤30 days old) was in the care of family members and using a calculation of the total births reported to the Pennsylvania Health Care Cost Containment Council,* a rate of newborn falls was estimated per 10,000 live births. Rate calculations ranged from 0.4 to 3.8 newborn falls per 10,000 live births.

* The Pennsylvania Health Care Cost Containment Council (PHC4) is an independent state agency responsible for addressing the problem of escalating health care costs, ensuring the quality of health care, and increasing access to health care for all citizens regardless of ability to pay. PHC4 has provided data to this entity in an effort to further PHC4’s mission of educating the public and containing health care costs in Pennsylvania.

PHC4, its agents, and staff, have made no representation, guarantee, or warranty, express or implied, that the data—financial, patient, payor, and physician specific information—provided to this entity are error-free, or that the use of the data will avoid differences of opinion or interpretation. This analysis was not prepared by PHC4. This analysis was done by the Pennsylvania Patient Safety Authority, PHC4, its agents, and staff, bear no responsibility or liability for the results of the analysis, which are solely the opinion of this entity.

### Table. Pennsylvania Rate of Falls While under Family Care for Newborns ≤30 Days Old

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NO. OF NEWBORN FALLS*</th>
<th>NO. OF LIVE BIRTHS IN PENNSYLVANIA</th>
<th>RATE OF NEWBORN FALLS PER 10,000 LIVE BIRTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>6</td>
<td>140,817</td>
<td>0.4</td>
</tr>
<tr>
<td>2006</td>
<td>19</td>
<td>144,406</td>
<td>1.3</td>
</tr>
<tr>
<td>2007</td>
<td>28</td>
<td>144,717</td>
<td>1.9</td>
</tr>
<tr>
<td>2008</td>
<td>21</td>
<td>141,345</td>
<td>1.5</td>
</tr>
<tr>
<td>2009</td>
<td>42</td>
<td>140,609</td>
<td>3.0</td>
</tr>
<tr>
<td>2010</td>
<td>34</td>
<td>136,726</td>
<td>2.5</td>
</tr>
<tr>
<td>2011</td>
<td>26</td>
<td>136,646</td>
<td>1.9</td>
</tr>
<tr>
<td>2012</td>
<td>35</td>
<td>135,811</td>
<td>2.6</td>
</tr>
<tr>
<td>2013</td>
<td>51</td>
<td>133,653</td>
<td>3.8</td>
</tr>
</tbody>
</table>

* Newborn falls reported to the Pennsylvania Patient Safety Authority

† Data obtained from the Pennsylvania Health Care Cost Containment Council

**Time of Newborn Falls**

The time of newborn falls was analyzed from PA-PSRS event reports. Time is a required field in PA-PSRS; however, the time was reported as unknown in 15 of the 272 newborn fall events. Of the 257 time-reported events, analysis showed that 58.0% (n = 149) of newborn falls occurred between midnight and 7 a.m., with 19.5% (n = 29 of 149) of these falls occurring between 5 and 6 a.m. (see Figure 2).

**DISCUSSION**

**Newborn Injuries**

Improving the safety of patients is recognized as a priority in healthcare. Although falls and other injuries are primary concerns for hospitalized adults, there is a lack of newborn studies in the literature addressing newborn falls and other injuries that occur while the newborn is in the care of their families.

Even determining the true incidence of newborn events is challenging since families may be reluctant to report a newborn injury because of guilt or shame. Some events submitted to the Authority describe how a fall was reported by a roommate of the patient, a staff member, or the mother several hours after the fall occurred only after noticing a change in the newborn’s behavior or physical condition. One case narrative in the literature quoted a mother as saying she was not going to tell anyone about the fall because she thought the newborn would be “just fine.”

**Fall definition.** In the second quarter of 2013, the American Nurses Association’s National Database of Nursing Quality Indicators (NDNQI) launched a revised fall indicator as a clarification to its definition to include a baby or child drop. A 46% increase was observed in the PA-PSRS newborn falls data from 2013, after the new definition was published, compared with 2012.

The NDNQI definition includes the following: “A fall in which a newborn, infant, or child being held or carried by a healthcare professional, parent, family member, or visitor falls or slips from that person’s hands, arms, lap, etc. This can occur when a child is being transferred from one person to another. The fall is counted regardless of the surface on which the child lands (e.g. bed, chair, or floor) and regardless of whether or not
the fall results in an injury. Falls in which a child rolls off a bed, crib, chair, table, etc. count as falls but are not classified as drops.6

The Authority launched a new falls reporting program in 2012 to standardize essential program components, including standardization of the definition for falls to ensure that all participating hospitals identify, measure, and report falls in the same manner.7

Newborn fall studies. A literature search revealed studies in Utah and Oregon providing statistics about newborn falls in a hospital setting. Extrapolating data from the two studies suggests that the number of in-hospital newborn falls in the United States per year ranges from 600 to 1,600. This is at a rate of 1.6 to 4.14 newborn falls per 10,000 live births.1,2

Both the Utah and Oregon studies stated that the majority of newborn falls occurred in the early morning hours between 2 and 9 a.m.1,2 Another study monitoring near misses stated that 78% of newborn falls might have occurred on the night shift between 11 p.m. and 7 a.m., when nurses found mothers either falling asleep or asleep while holding their newborns.8

Bumps and unresponsive newborn events. Events related to bumping the newborn’s head or finding the newborn unresponsive were not addressed in the literature. Similar to newborn falls, exhaustion may cause inattentiveness to safety when transferring or holding a newborn.1,2

Both fatigue-related events reported to the Authority had similar maternal characteristics associated with newborn falls, including both mothers having fallen asleep while breastfeeding.

RISK REDUCTION STRATEGIES

A literature review revealed that healthcare facilities have begun to recognize newborn falls as a concern for potential harm and have implemented initiatives and adopted strategies to help reduce or prevent newborn falls.

Newborn Falls Initiative

One hospital in Alabama was able to bring their newborn fall rate to zero after adopting a comprehensive falls prevention program.9 After seven newborn falls occurred in the postpartum unit of Huntsville Hospital for Women and Children, Huntsville, Alabama, from December 2011 to July 2012, a committee was formed to examine each fall event, review the literature on newborn falls, and talk to other hospitals about their experiences.

The hospital implemented a comprehensive falls prevention strategy in July 2012. The interventions addressed protocols for parent education, transport of newborns, placement of newborns for sleeping, review of maternal medications, assessment of environment and mother’s level of consciousness, and prevention of falls during newborn feedings.

Staff attended a required class on newborn falls and started charting with two
new tools to assess a newborn’s risk of falling and perform a postfall debriefing. The staff educated parents on falls at admission, at the beginning of each shift, or as needed and instructed parents to call before and after infant feedings so that bedside rails could be raised and/or lowered as an added precaution. Newborn falls information was also added to the safety information sheet and was read to the parents and signed at admission. During the year following program implementation, no newborn falls occurred.

**Rooming-In without Bed-Sharing**

In an expansion of recommendations for a safe infant sleeping environment, the American Academy of Pediatrics stated that rooming-in (i.e., sharing the same room) without bed-sharing (i.e., sharing the same bed) is most likely to prevent suffocation, strangulation, and entrapments that might occur when the newborn is sleeping in an adult bed. Other safe infant sleeping recommendations included placing the bassinet close to the parent’s bed for feeding, comforting, and monitoring of their newborn. Newborns may be brought into the bed for feeding or comforting but should be returned to their own bassinet when the parent is ready to return to sleep. The American Academy of Pediatrics does not recommend any specific bed-sharing situation as safe.

Helsley et al. described a “no co-sleeping” policy that was incorporated into nursing practice to ensure that the newborn was moved back to the bassinet by the parents and staff when the mother was preparing for sleep, became drowsy, or had fallen asleep. Hospitals may find it a challenge to balance the mother’s need for rest while promoting bonding and breastfeeding success.

Hourly rounding was incorporated into a hospital’s falls prevention practice, with nurses intervening when finding a sleepy mother with a newborn in her arms. If this occurred, nurses were to thoughtfully remove the newborn from the mother’s arms and place the newborn into the bassinet. The author concluded that the effect of regular rounding on maternal rest and newborn falls prevention is an area requiring further research.

In order to provide an environment conducive for rooming-in, maternal characteristics have been studied. One study found several common maternal factors present when a newborn fall occurred. Another study gathered maternal information on 64 near misses when a newborn fall had the potential to occur (see “Maternal Characteristics”).

**Newborn Safety Information for Families**

Fatigue from the labor and delivery process may lead to a newborn falling from the arms of a caregiver. At this exciting time, families may not be aware that they may fall asleep while holding their newborn while lying in bed or sitting in a hospital chair.

An infant falls task force was formed from staff members of the Couplet Care Unit (postpartum unit) at Lancaster General Health’s Women and Babies Hospital, Lancaster, Pennsylvania. After researching the literature, the task force developed an informational sheet that outlines security and safety risk factors for the parents and their newborn during the hospital stay.

“We have always had a safety form that we used for our parents upon delivery of their infant,” said Alyssa Livengood Waite, MSN, MHA, RN, nurse manager, Couplet Care/Women’s Inpatient Unit. “However, after researching this topic extensively, we felt compelled to change the format and add content regarding risk of falls and drops of newborns.”

The staff reviews the informational sheet with the mother and other family members within the first two hours of transfer to the Couplet Care Unit, and then the mother signs the form. “At the time we ask for the signature, we have educated the mother and any family in the room with her as we provide our nursing care to the family,” said Waite. “We find that...”

---

**MATERNAL CHARACTERISTICS**

According to the reviewed literature, common maternal characteristic assessed after a newborn fall included the following:

- High level of fatigue
- Breastfeeding or breast/bottle feeding
- Cesarean birth
- Second or third postoperative night
- Pain medication in the last two to four hours
- Age 18 to 28 years
- Prior near miss (e.g., nurses found mother either falling asleep or asleep while holding newborn)
- History of narcotic substance use and/or methadone treatment program

**Notes**

this education must continue to reoccur frequently throughout the family’s stay.”

The unit also posts an ABC Blocks visual reminder on each newborn’s bassinet at eye level for mothers to see while they are in bed. It outlines safe sleeping habits for newborns, including sleeping alone. Other “safe sleep” education includes videos, pamphlets, and single sheets picturing correct newborn placement in the crib.

Hospital staff in seven Oregon hospitals, part of Providence Health and Services, also adopted an informational sheet titled Newborn Safety Information for Parents that outlines the factors that appear to increase the risk of newborn falls during the postpartum period.

Challenges staff faced when using the informational sheet included receiving a parent’s signature at an emotional time when not all the information may be processed or understood and when other admission paperwork is being obtained. Other literature suggests providing parents with written material prenatally and scheduling meetings with childbirth educators, who can help disseminate information about newborn safety in a message that is consistent, clear, and standardized. Lancaster General Health’s information sheet and ABC Blocks and Providence Health and Services’ Newborn Safety Information for Parents is available on the Authority’s website at http://patientsafetyauthority.org/EducationalTools/PatientSafetyTools/Pages/home.aspx.

Safer Bed Design

Hospital beds utilized in the maternity suite were examined to determine if equipment could aid in newborn falls prevention. It was discovered that in other countries, such as the United Kingdom, bassinets are often mounted to the bed frame, keeping the newborns within reach of their mothers, whereas in the United States, bassinets are designed to be separate and independent units.

Research of bed manufacturers found no modifications of hospital beds or bedrails that addressed designs that would prevent newborn falls, head entrapment, or suffocation. Siderails on hospital beds may have openings large enough for a newborn to fall to the floor when the mother is lying flat or when the head of the bed is elevated by 45 degrees.

Helsley et al. reported working with bed manufacturers to develop safer mother/baby beds. A picture that demonstrates how a newborn can fall out of a hospital bed afterbirth is available on the Authority’s website at http://patientsafetyauthority.org/EducationalTools/PatientSafetyTools/Pages/home.aspx.

Postfall Huddle

Evaluation by staff of why a newborn fall occurred is key to examining the incident and capturing ways to prevent future falls. This has been essential in evaluating adult falls. Providence Health and Services uses an online version of the Newborn Fall Unusual Occurrence Report/Debrief Form Post Event to capture additional details for continued evaluation of factors involved in the event. This form is available on the Authority’s website at http://patientsafetyauthority.org/EducationalTools/PatientSafetyTools/Pages/home.aspx.

CONCLUSION

The birth of a baby can be one of the most joyous experiences for families. Dropping a baby after falling asleep or caring for an infant when an accidental injury occurs can be an emotional and life-changing experience for families, especially if serious injury occurs. Literature shows that healthcare facilities can make a difference in newborn events by incorporating prevention methods such as family awareness, staff monitoring, and education for both staff and families.

NOTES

LEARNING OBJECTIVES

— Identify the types of events reported to the Pennsylvania Patient Safety Authority in which newborns were injured while in the care of their families.
— Recognize the national rate of newborn falls.
— Recognize the types of newborn fall events.
— Recall the most frequent time of day a newborn fall event occurs.
— Identify common maternal characteristics assessed after a newborn fall.

SELF-ASSESSMENT QUESTIONS

The following questions about this article may be useful for internal education and assessment. You may use the following examples or come up with your own questions.

1. According to events reported to the Authority, which of the following types of events occurred while newborns were in the care of their families?
   a. Falls, bumps to the head, and unresponsiveness
   b. Falls, wrong treatment, and bumps to the head
   c. Wrong treatment, bumps to the head, and wrong expressed breast milk
   d. Unresponsiveness, wrong medication, and no newborn identification band
   e. Falls, no newborn identification band, and unresponsiveness

2. What is the estimated national rate of newborn falls per 10,000 live births?
   a. 2.5 to 6.54
   b. 1.5 to 7.03
   c. 1.6 to 4.14
   d. 3.2 to 6.53
   e. 1.2 to 3.24

3. Which of the statements below describes a situation that did not contribute to a newborn fall reported to the Authority?
   a. Falls occurred due to fatigue after a family member fell asleep in a bed or chair holding the newborn.
   b. Family members dropped newborns while transferring.
   c. Newborns slipped out the arms of a family member who was lying, sitting, or standing.
   d. Family members dropped newborns while walking in the hospital hallway.
   e. Newborns rolled off of a family member’s lap.

4. Which time was most frequently reported to the Authority as the time of newborn falls?
   a. 10:00
   b. 14:00
   c. 19:00
   d. 05:00
   e. 01:00

5. Which of the following is not a maternal characteristic that may contribute to a newborn fall?
   a. High level of fatigue
   b. Age 18 to 28
   c. Pain medication in the last two to four hours
   d. Natural childbirth
   e. Breastfeeding or breast/bottle feeding
THE PENNSYLVANIA PATIENT SAFETY AUTHORITY AND ITS CONTRACTORS

The Pennsylvania Patient Safety Authority is an independent state agency created by Act 13 of 2002, the Medical Care Availability and Reduction of Error (Mcare) Act. Consistent with Act 13, ECRI Institute, as contractor for the Authority, is issuing this publication to advise medical facilities of immediate changes that can be instituted to reduce Serious Events and Incidents. For more information about the Pennsylvania Patient Safety Authority, see the Authority’s website at http://www.patientsafetyauthority.org.

ECRI Institute, a nonprofit organization, dedicates itself to bringing the discipline of applied scientific research in healthcare to uncover the best approaches to improving patient care. As pioneers in this science for more than 40 years, ECRI Institute marries experience and independence with the objectivity of evidence-based research. More than 5,000 healthcare organizations worldwide rely on ECRI Institute’s expertise in patient safety improvement, risk and quality management, and healthcare processes, devices, procedures and drug technology.

The Institute for Safe Medication Practices (ISMP) is an independent, nonprofit organization dedicated solely to medication error prevention and safe medication use. ISMP provides recommendations for the safe use of medications to the healthcare community including healthcare professionals, government agencies, accrediting organizations, and consumers. ISMP’s efforts are built on a nonpunitive approach and systems-based solutions.