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 to 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. Newborn falls were further analyzed and categorized into six types based on the event description (see Figure 1). Rates and times of falls were also analyzed and compared with the rates and times noted in literature studies.

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 reports that she was holding infant in her lap and the baby slipped from her lap onto floor. Nurse assessed infant. Physician notified and assessed infant. No injury visible.
  - **Newborn rolled out of hospital bed or isolette:**
    - Mother rang call bell to report infant had rolled off bed onto floor. Mother fed infant and placed [newborn] on her bed instead of in crib. No injury noted.

- **Family member dropped newborn while transferring:**
  - 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 feeding baby while in bed. Mother stated 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”.

- **Family member fell asleep in bed or chair:**
  - X-ray revealed a skull fracture.
  - 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.

**Bumps to the newborn’s head.** In 14 reported events, the newborn’s head was bumped while being held by a family member. Circumstances in which the newborn’s head was bumped included the family member dropping or reaching for a telephone or cell phone; bumping the newborn’s head on a door, bed, or other object; and bumping the newborn’s head on an object overhead. Two events were reported as Serious Events. Examples of these kinds of events with and without harm, respectively, are as follows:

- **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.**
- **Dad reported that he accidentally bumped baby’s head on plastic portion of bassinet. Baby cried briefly. No open areas or bumps noted.**

**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.

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:

- **Mother of newborn reported that her baby had fallen out of her arms and onto the floor during the night,** stating that she was holding her baby and fell asleep. X-ray revealed a skull fracture.
- **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.**
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.1 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,1 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.

### 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.4 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.5 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

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**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>
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<tr>
<td>2005</td>
<td>6</td>
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<td>19</td>
<td>144,406</td>
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<tr>
<td>2007</td>
<td>28</td>
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<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

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* The Pennsylvania Health Care Cost Containment Council (PHC4) is an independent state agency responsible for addressing the problem of escalating health 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.

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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.8

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 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
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.1

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.1 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.9 Lancaster General Health’s information sheet and ABC Blocks and Providence Health and Services’ Newborn Safety Information for Parents will be 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,11 whereas in the United States, bassinets are designed to be separate and independent units.1

Research of bed manufacturers found no modifications of hospital beds or bed rails 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.1

Helsley et al. reported working with bed manufacturers to develop safer mother/baby beds. Pictures that demonstrate how a newborn can fall out of a hospital bed will be 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.1 This form will be 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
