Newborns Pose Unique Identification Challenges

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ABSTRACT

Safe patient care starts with accurate patient identification. Unique characteristics of the newborn population pose challenges for accurate and consistent patient identification. Hospitalized newborns often share similar birth dates and medical record numbers and, with multiple births, even share surnames. Unlike older patients, newborns are unable to actively participate in confirming this information and often lack distinguishing physical characteristics. Pennsylvania Patient Safety Authority analysts estimate that an average of nearly two newborn misidentification events occur daily in Pennsylvania. Safety huddling, distinct naming systems, clinician awareness, and technology such as bar coding may help to decrease newborn identification errors. (Pa Patient Saf Advis 2016 Jun;13[2]:42-50.)

INTRODUCTION

Safe patient care starts with accurately identifying patients, to deliver the correct care.[1] Failing to correctly identify patients and match their identity to an intended clinical evaluation or intervention, or for administrative functions, can compromise patient safety.[2] Hospitalized newborns pose unique identification challenges because they often share similar or identical birth dates, similar medical record numbers, and, in the case of twins and multiple births, common surnames.[2]

Newborn misidentification has been reported to result in unintended procedures, such as a frenotomy (clipping of the frenulum, which connects the tongue to the floor of the mouth), performed on the wrong Tennessee newborn after a pediatrician confused him with another newborn.[3] Other examples of misidentification include two Virginia newborns who were switched at birth in 1995 and discharged to the wrong parents.[4] And a Washington, D.C., hospital nurse gave a newborn to the wrong mother, resulting in the newborn receiving formula instead of breast milk.[5]

A one-year study from Beth Israel Deaconess Medical Center in Boston found, on average, 26% of neonatal intensive care unit (NICU) newborns were at risk for being mistaken for another newborn on any given day because they had similar identifiers.[2] Health professionals from 54 hospitals in the Vermont Oxford Network reported that 11% of newborn errors over a more than two-year period involved misidentification.[6]

The Joint Commission recommends the use of at least two identifiers based on demographic information, such as the patient name, date of birth, or medical record number.[1] Unlike most patients, newborns are unable to actively participate in confirming this information and often lack distinguishing physical characteristics.[2]

Because of a scarcity of publications describing the incidence and effects of patient identification errors in newborns at a population level, analysts explored newborn identification events reported to the Pennsylvania Patient Safety Authority through its Pennsylvania Patient Safety Reporting System (PA-PSRS).

METHODS

Analysts queried the PA-PSRS database for reports of events that occurred from January 2014 through December 2015 for patients through 30 days of age using keywords including "identifier," "ID band," "patient name," "label," "another patient," "identification," and "wrong patient." In this database, events are tagged by reporting health professionals with up to seven event-type categories such as "error related to procedure/treatment/test" or "medication error."

Analysts manually reviewed the resulting set of event report narratives to identify reports describing misidentification events and grouped them into related categories. Event descriptions containing the word "twin" were also identified.

The total number of misidentified events for the two years (n = 1,234) was divided by 2 for an average number per year, and then divided by 365 days to determine average newborn misidentification events per day.

The total number of events for 2014 (n = 617) was divided by the number of 2014 births reported by the Pennsylvania Department of Health (n = 141,355)* multiplied by 1,000 to determine a rate of misidentification events per every 1,000 live births.

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* These data were provided by the Division of Health Informatics, Pennsylvania Department of Health. The Department specifically disclaims responsibility for any analysis, interpretations, or conclusions. Data for live births in Pennsylvania for 2015 were unavailable.

Analysts conducted a review of the literature, as well as an Internet search, to identify strategies to reduce identification errors and patient harm in healthcare facilities. Interviews with laboratory, NICU, and obstetric personnel in Pennsylvania hospitals were also conducted to identify best practices and resources developed for identification practices to reduce misidentification events.

RESULTS

Analysts identified 1,234 misidentification events occurring between January 2014 and December 2015. The identified events were submitted in seven event type categories with 80% (n = 987) reported in "error related to procedure/treatment/test," followed by 8.3% (n = 102) reported in "medication error" (Table 1).

All reported events occurred in a hospital or birthing center. Five event reports were reported as Serious Events, with assigned harm scores of E or G; these were events in which breast milk was given to the wrong patient and a circumcision was performed without consent. No harm or unsafe conditions were reported with the remainder of the events, with the majority 40.3% (n = 497) assigned a harm score of C and 37.4% (n = 462) assigned a harm score of B2* (Table 2).

Analysts grouped events into four categories, based on event report narrative descriptions (see Figure).

The majority of the misidentification events (n = 917, 74.3%) involved procedure errors, including mislabeled blood specimens, unlabeled urine samples, wrong patient respiratory reports, and wrong patient radiographs. The next largest category was general misidentification events (n = 118, 9.6%), including no

* The Pennsylvania Patient Safety Authority Harm Score Taxonomy is available online at http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2015/mar;12(1)/PublishingImages/taxonomy.pdf.

Table 1. Newborn Misidentification Events Reported to the Pennsylvania Patient Safety Authority, by Event Type,* January 2014 through December 2015 (N = 1,234)

EVENT TYPE	NO. (%) OF EVENTS
Error related to procedure, treatment, or test	987 (80.0)
Medication error	102 (8.3)
Complication of procedure, treatment, or test	28 (2.3)
Transfusion	25 (2.0)
Skin integrity	1 (0.1)
Equipment, supplies, or device	1 (0.1)
Other	90 (7.3)

* Event types are defined by Pennsylvania Patient Safety Reporting System taxonomy and are assigned to events by healthcare facilities at the time of report submission. Total percentage listed is greater than 100% due to rounding.

Table 2. Newborn Misidentification Events Reported to the Pennsylvania Patient Safety Authority, by Event Harm,* January 2014 through December 2015 (N = 1,234)

HARM SCORE	NO. (%) OF EVENTS
Incident: Unsafe conditions (harm score A)	93 (7.5)
Incident: No harm (harm scores B1 through D)	1,136 (92.1)
Serious Event: Temporary harm (harm scores E through F)	4 (0.3)
Serious Event: Significant harm (harm scores G through I)	1 (0.1)

* Event harms are defined by Pennsylvania Patient Safety Reporting System taxonomy and are assigned to events by healthcare facilities at the time of report submission.

identification band on patient and mismatched identification bands on mother and newborn; documentation practices, such as another patient's consent in the medical record; and transferring issues such as the wrong newborn taken to the parents. Medication events (n = 110, 8.9%) included administering the wrong drug to the patient; breast milk administration mishaps (n = 89, 7.2%) included providing the wrong breast milk to the newborn.

Events in the procedure errors grouping were separated into diagnostic areas impacted by the misidentification: laboratory, radiology, surgical, and respiratory. The word "twin" was documented in 3.3% (n = 41 of 1,234) of the events.

Analysts estimated that 1.7 or nearly 2 newborn misidentification events occur daily in Pennsylvania, impacting 4.6 newborns per every 1,000 births or 1 newborn for every 217 live births.
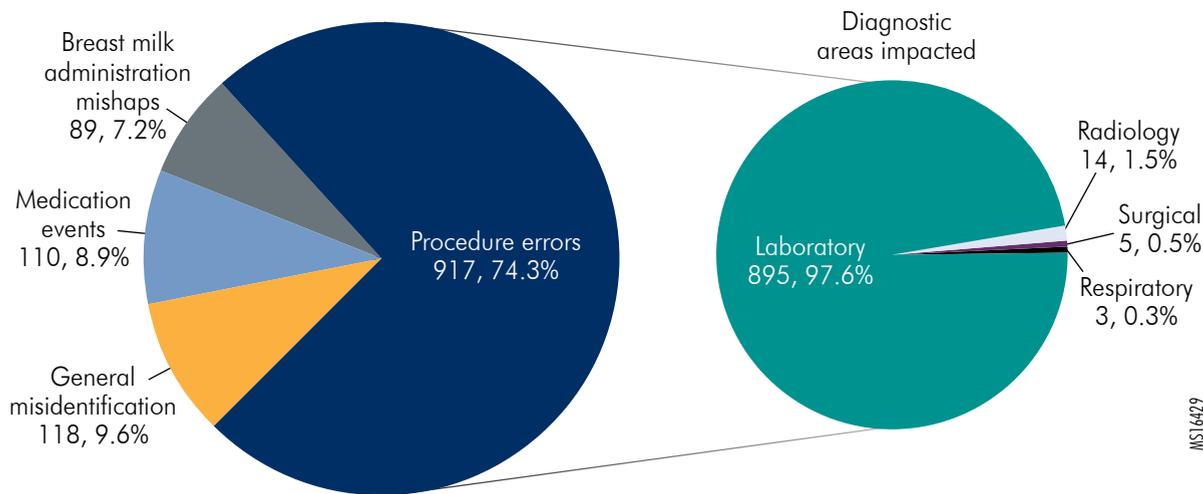
Newborn Misidentification Events

Procedure errors. Examples of events reported to the Authority involving diagnostic misidentification events are as follows:[†]

> *Another nurse picked up the printed cord blood labels for this delivery and*

[†] The details of the PA-PSRS event narratives in this article have been modified to preserve confidentiality.

Figure. Misidentification Error Types, January 2014 through December 2015, as reported to the Pennsylvania Patient Safety Authority (n = 1,234)*

Breast milk administration mishaps
89, 7.2%

Medication events
110, 8.9%

General misidentification
118, 9.6%

Procedure errors
917, 74.3%

Diagnostic areas impacted

Radiology
14, 1.5%

Surgical
5, 0.5%

Respiratory
3, 0.3%

Laboratory
895, 97.6%

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*Total percentage listed is less than 100% due to rounding.

used them for the specimens from a previous delivery without verifying the name on the label. The primary nurse for this delivery called the lab to reproduce cord blood labels, believing the printer did not print them. Both specimens were sent with the same label.

There were two baby girls with the same last name in the unit. An x-ray was ordered on the wrong patient but was performed on the correct patient.

General misidentification events.
Examples of events reported to the Authority involving general misidentification events, are as follows:

Patient did not have an identification band. It was taped to the bassinet and mother reports staff scanned the taped ID band.

Patient had the wrong identification band. It contained the right name but

another patient's birth date. The staff had used the ID band for several days.

Phlebotomist was in the NICU to draw blood from a baby. When she looked at the baby's name band on the wrist it said a different name. She notified the nursing staff that it was the incorrect baby. The resident in the room stated it was the right baby. She then told them the name on the band was not the name on her requisition. The nurse checked and confirmed the baby in fact had the incorrect band on. It was removed, and the phlebotomist states the nurses were trying to figure out if another baby had the incorrect band and how to correct the mistake.

Medication events. Examples of events reported to the Authority involving medication misidentification events, are as follows:

Antibiotic order faxed to pharmacy. When entering the order, pharmacist

noted this patient's weight was significantly different from the weight on the order (2.185kg vs. 0.83kg). The pharmacist found that the sticker on the antibiotic order was incorrect. There are currently two patients with the same last name.

Lasix [furosemide] ordered on wrong baby in NICU. Error caught and corrected before administration.

Breast milk administration mishaps.
Examples of events reported to the Authority involving breast milk misidentification events, are as follows:

Newborn baby boy given to incorrect mother for breast feeding. Staff nurse realized the mix-up and went to retrieve newborn from incorrect mother. Event discovered in short period of time. After reviewing event with the incorrect mother, it was confirmed that the baby did indeed latch on to her breast. Infection Prevention

notified. Event was disclosed to this baby's birth mother and father.

Patient was fed breast milk that was from another patient with the same last name.

DISCUSSION

Hospitalized newborns create unique identification challenges, especially the high-risk NICU population that has prolonged lengths of stay. Analysis of PA-PSRS reveals that an average of nearly two newborn misidentification events are reported daily in Pennsylvania, including errors related to procedures, general misidentification events, medication events, and breast milk administration mishaps.

Healthcare workers perform patient identification several times a day for almost every instance of care. A medical error of identification can result if any step in this process is not properly performed.[7] Similarities in the newborn population including surnames, medical record numbers, and birth dates contribute significantly to misidentification risk. Gray and co-authors found the most common cause was similar-appearing medical record numbers, followed by identical or similar-sounding names.[2]

Voluntary anonymous reporting in the Vermont Oxford Network uncovered a broad range of medical errors affecting neonates at high risk of health problems and their families. Patient misidentification was the root cause of 11% of diagnosis, treatment, prevention, and other events.[6]

Strategies to prevent misidentification error for newborns include changing from a nondistinct naming convention (e.g., Babyboy) to a distinct naming convention that uses the mother's name and newborn's gender (e.g., Wendysboy);[8] using communication tools such as huddling and color coding for like-sounding names;[9] standardizing practices for identification banding; and using bar-code technology

for patient identification for medication administration, breast milk administration, and blood collection.[10,11] Another area of discussion includes implementing national identification numbers as unique health identifiers (see "Unique Health Identifiers").

UNIQUE HEALTH IDENTIFIERS

When the Health Insurance Portability and Accountability Act of 1996 (HIPAA) was proposed by the US Department of Health and Human Services, it called for the creation of a unique health identifier (UHI); each person would be issued a unique medical identification number. Use of a UHI was never enacted because of fears of privacy and security breaches.[1]

Health providers seek ways to link patients across a burgeoning number of electronic patient information management systems, but these systems may not coordinate their patient identification processes.[2] Advocates of a UHI point to other countries, such as Australia and England and Wales, which have started their own UHI programs, including guidelines for identification of newborns.[3,4]

In the absence of consensus, information management advocates, such as the College of Healthcare Information Management Executives of Ann Arbor, MI, have called for the creation of patient identifier systems outside of federal government control.[5] Privacy advocates, such as the Patient Privacy Rights organization, support using a patient identifier on an encrypted card held by patients, who would be in control of their own health information.[6] Other systems use facial recognition authentication, palm vein recognition, and fingerprint scanning.[7]

Notes

1. US Department of Health and Human Services. Unique health identifier for individuals: a white paper [online]. [cited 2016 May 10]. https://aspe.hhs.gov/legacy-page/white-paper-unique-health-identifier-individuals-152126

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3. National Patient Safety Agency. NHS number to be used as the unique patient identifier by all NHS organisations in England and Wales [online]. [cited 2016 May 10]. http://www.npsa.nhs.uk/corporate/news/nhsnumber/

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Contributory Factors

Misidentifications can occur in diagnostic, therapeutic, or supportive areas of care because in some cases newborns lack facial or other distinguishing physical features (i.e., some newborns may look similar). PA-PSRS event analysis, Authority

interviews, and a literature review isolated the following contributory factors that can lead to misidentification errors.

Documentation practices. Henneman and co-authors concluded that medical providers infrequently verify patient identification with two identifiers during computerized provider order entry.[12] Carroll and colleagues found frequent NICU documentation discrepancies in written resident progress notes, including errors in documentation of medications, vascular lines, and patient weight. Notes omitted information and documented inaccurate information.[13] In another NICU study, a serious error was caused by a documentation mistake, resulting in the wrong newborn receiving an antibiotic.[14] Computerized order entry helps decrease written documentation errors, said Vivian Haughton, MSN, Clinical Nurse Specialist, Women and Babies Hospital, Lancaster General Health. "The providers must enter orders, even remotely," she said. "Nurses do not have to interpret handwriting."[15]

Labeling errors. Breast milk and other specimens such as blood and urine require a patient-specific label. Previous work by the Authority analyzed events pertaining to mismanagement of expressed breast milk and provided information and resources about best practices.[16] Misidentified specimens create a serious risk to safety, leading to misdiagnosis and inappropriate treatment.[17] Labeling errors for blood or other specimens can occur when the labels are not readily available at the point of care. The wrong label may be used in the rush to provide a label for a specimen. For example, a cord blood specimen might mistakenly have the mother's label applied, said Barbara Booth, BS, Laboratory Service Improvement Coordinator, Geisinger Wyoming Valley Medical Center.[18] Mismanagement of breast milk can occur with the placement of the wrong label.

Patient identification band concerns. Healthcare workers help to reduce misidentification errors with placement of patient identification bands, usually on both the newborn's ankle and wrist.[10] Bands can include the patient's name, date of birth, medical record number, visit number, admission date, and physician.[19] Bands may also include technology such as barcodes that can be scanned prior to medication administration.[19] Howanitz and colleagues found patient identification band errors in up to 7.4% of all patients over a two-year period. Missing wristbands accounted for 71.6% of the errors, with the remainder involving incorrect, conflicting, or incomplete information.[20] Elizabeth Quigley, MSN, Nurse Manager Intensive Care Nursery, The University of Pennsylvania Health System, said that "barcoding is used on patient identification bands placed on the newborn's wrist and ankle. Nurses then scan the barcode when administering medication or breast milk."[9]

Registration issues. To generate orders and labels for specimens, newborns need to be registered in the electronic health record, according to Booth.[18] "Confusion around registration becomes an issue soon after birth," Booth said. "Most patients who come into the hospital are registered." She explained further: "When you have a new baby come into the world, you had one patient, now you have two. Getting that baby registered and treated as an individual is important for correct identification."[18]

Similar identifiers. Hospitals commonly provide temporary names to newborns soon after they are born, such as Babygirl Jackson or Babyboy Jones.[21] A 2013 survey of 335 NICUs showed these non-distinct names are used by more than 80% of hospitals.[22] Although this provides a quick way to assign a name for registration and patient identification bands, it also results in similar identifiers. If two newborns from different families have the same last name or if there are multiple births

(e.g., twins, triplets), this can increase the presence of similar patient identifiers, including birthdates. A 2015 study published in *Pediatrics* demonstrated that replacing a non-distinct naming convention (e.g., Babyboy) with a distinct naming convention that uses the mother's first name (e.g., Wendysboy) can reduce misidentification errors by 36%.[8]

Hospitals may also provide medical record numbers in sequence.[2] The Joint Commission's Sentinel Event database reported 10 cases of wrong-person surgeries since 2010 in which circumcisions were performed on the wrong newborn because of similar identifiers.[21] "OB Safety Rounds" are conducted every four hours in the Birth Center at Magee-Womens Hospital of the University of Pittsburgh Medical Center to promote situational awareness of current issues that have the potential to impact safety, quality, and care delivery, such as identifying similar-sounding names, said Vivian Petticord, DNP, Perinatal Safety Nurse at the hospital. The around-the-clock rounds are multidisciplinary and include medical and nursing representation from anesthesia, obstetrics, and neonatology, she said. A "Stop" symbol is placed on the centralized patient board and on the patient's room if there are similar-sounding names.[23]

Limitations

This report may have limitations. Events may not have been reported as an outcome of a misidentification because it may not have been recognized at the time the event was submitted. Misidentification events may involve two newborns, (i.e., the wrong newborn gets medication, while the correct newborn misses a dose) but may have been identified in only one event report. Because of the way PA-PSRS is structured, analysts were unable to determine the causal and associated factors for the newborn identification errors that were described.

RISK REDUCTION STRATEGIES

The following strategies may be useful to healthcare facilities seeking to reduce misidentification events for diagnostics, general identification, medication management, and breast milk administration. Some of these strategies may be considered for more than one event category.

Documentation Practices

— Make important information legible and prominent on identification bands, the electronic health record screen, and the specimen label.[12]

— Check for two patient identifiers before entering information into a medical record.[12]

— Use provider order entry systems that physicians can use in the healthcare facility or remotely.[15]

— Provide awareness to healthcare professionals of the potential for identification errors, such as pulling or entering orders in the wrong medical record.[12]

Labeling Errors

— Use identification verification technologies, such as bar coding and radiofrequency.[7]

— Use bedside label printers to generate labels at the point of care.[24]

— Collect specimens after a label is printed and at the point of care.[18]

— Use blood tube extenders or a "tube-within-a-tube" system when using microtainers, if small labels are not available.[17,18]

— Educate staff about labeling protocols and verify understanding of the correct procedure through demonstration.[25]

Breast Milk

— If auto identification technologies are not available, use nursing double checks.[16,26]

— Ask parents to participate in the double-check process.[16,26]

— Use individual warmers at the bedside to reduce opportunities for misidentification.[16,26]

— Use a freezer-safe and smudge-proof label to ensure legibility of patient identifiers.[16,26]

Patient Identification Band Concerns

— Use auto identification technologies, such as bar coding and radiofrequency.[2]

— Ensure patient identification bands are properly placed before treatment administration or diagnostic testing.[17]

— Apply newborn identification bands to two body sites, such as the wrist and ankle.[9]

— Replace identification bands if the information on them is not complete and legible.[25]

— Educate parents on the importance of maintaining patient identification bands on their newborn at all times.[6]

Band Design[19]

— Simplify unnecessary information not used for positive patient identification.

— Locate the patient identifiers in an easy-to-find place.

— Use large font sizes and readable text styles.

— Standardize information layout and presentation.

— Avoid using all capitalized letters.

Registration Issues

— Pre-register newborns with information that is known and then activate the registration with the additional information after birth.[18]

— Meet with registration departments to streamline procedures needed to place newborn information into electronic health records.[18]

Similar Identifiers

— Assign distinct first names at birth by incorporating the mother's first name into the newborn's first name, (e.g., Wendysgirl Jackson versus Babygirl Jackson).[8]

— Meet in a huddle daily or more often to acknowledge and discuss newborns who have similar-sounding names.[23]

— Place newborns with similar-sounding names in a different pod, or across the nursery or NICU.[15,23]

— Use an identifying symbol such as a star, "Stop" sign, color-coding, or plain language such as "similar name" to visually alert workers to similar-sounding names.[15,23]

CONCLUSION

Unique characteristics of the newborn population pose challenges for accurate and consistent patient identification. These can include similarities in patient identifiers such as similar names, medical record numbers, and birth dates.[2] Misidentification has contributed to wrong patient procedures, issues in breast milk mismanagement, wrong medications, and newborns switched at birth and given to the wrong parents. Unlike other populations, newborns cannot participate in the identification process and may have similar physical characteristics.[2] Authority analysts estimated that an average of nearly two newborn misidentification events occur daily in Pennsylvania, which equates to one misidentification error for every 217 live births. Safety huddling,[15,23] distinct naming systems,[8] clinician awareness, and technology such as bar coding[11] may help to decrease newborn identification errors.

NOTES

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LEARNING OBJECTIVES

— Identify common reasons why newborn misidentification occurs.

— Recall newborn misidentification events most likely to occur as identified in events reported through the Pennsylvania Patient Safety Reporting System (PA-PSRS).

— Recall the predominant contributory factors for newborn misidentification identified in events reported through PA-PSRS.

— Assess strategies to decrease newborn misidentification.

SELF-ASSESSMENT QUESTIONS

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

1. All of the following are common reasons why newborns are misidentified *except*:
   a. Similar birth dates
   b. Same medical record number as mother
   c. Identical surname for multiple births
   d. Similar weight and length

2. Which one of the following is the most common type of event associated with newborn misidentification, as reported in Pennsylvania?
   a. Managing breast milk
   b. Administering medications
   c. Performing radiology procedures
   d. Carrying out laboratory orders

3. Which one of the following is identified as a contributory factor in newborn misidentification?
   a. Labels not readily available at the point of care
   b. Patient identification labels placed on both the wrist and ankle of the newborn
   c. Scanning barcodes before administering breast milk
   d. Using two identifiers during computerized provider-order entry

4. Adelman et al. suggest a distinct naming system using a combination of the mother's and newborn's names such as _____ .
   a. BabyboyWendy Jackson
   b. Babygirl and Wendy Jackson
   c. Wendysboy Jackson
   d. Wendysbabyboy Jackson

5. Which one of the following breast milk administration practices could contribute to newborn misidentification?
   a. Including parents in the identification process
   b. Warming breast milk in the preparation area
   c. Using a nursing double-check process
   d. Placing smudge-proof labels to ensure legibility

Question 6 refers to the following scenario:

A 31-week-old newborn was transferred to the Neonatal Intensive Care Unit for monitoring and evaluation. The nurse found a signed surgical consent for a biliary atresia in the patient's chart, but the patient was not scheduled for this procedure. She contacted the resident who obtained the consent and was told to disregard it. The nurse discovered there was another patient in the unit with a similar last name.

6. In the above scenario, which one of the following statements is most likely true?
   a. Information on the patient's identification bands was incorrect.
   b. The resident did not check two forms of identification in the patient's chart.
   c. The parents consented to the wrong procedure.
   d. The resident used the wrong consent form.

Question 7 refers to the following scenario:

A newborn is found in a mother's room without any patient identification bands. One identification band is found taped to the newborn's bassinet and the other has been placed on the counter.

7. Which one of the following interventions is most effective in preventing newborn misidentification?
   a. Make sure the identification band taped to the bed is correct.
   b. Place one of the identification bands on the newborn.
   c. Find out why the identification bands were removed and take corrective action.
   d. Remove the identification bands from the patient's room.

PENNSYLVANIA PATIENT SAFETY ADVISORY

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 nearly 50 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.

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