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Helping Nurses Identify and Report Sentinel Injuries of Child Abuse in Infants

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Sentinel injuries (SIs) are some of the earliest and most readily identifiable red flags of child abuse. SIs are unexpected bruising or intra-oral injuries in pre-mobile infants and highly correlated with child abuse. However, SIs are not always recognized and reported as red flags of child abuse. Infants are left at risk for continued harm when SIs are not identified and reported. Although increasing nurses' knowledge of SIs is important, child abuse researchers and behavioral theorists have identified that knowledge alone does not predict nurses' behaviors when identifying and reporting suspected child abuse. Other predictors may include implicit biases, interpersonal and interprofessional relationships, and nurses' understanding of mandatory reporting laws. Nurses may improve their recognition and comfort of reporting SIs and all suspected child abuse by being alert for SIs, being aware of potential implicit biases, communicating in non-technical language with families, understanding the clinical evaluation of suspected child abuse, and understanding the processes of Child Protective Services (CPS). Using these steps, nurses can fulfill their legal and ethical responsibilities to protect and advocate for victimized children.

Key Words: Child abuse, sentinel injuries, child abuse reporting.

Sentinel injuries (SIs) refer to specific child abuse injuries. The term *sentinel injuries* was first used in the context of child abuse in 2013 and is defined as unexpected bruising and intra-oral injuries in pre-mobile infants (Sheets et al., 2013). Bruising and intra-oral injuries in pre-mobile infants are rare because the lack of mobility in young infants prevents accidental self-inflicted injuries. However, bruises and mouth injuries often do not require clinical intervention. Therefore, they can be overlooked by both parents and health care providers (HCPs) as trivial injuries. Thus, the term *sentinel injuries* was adopted to describe the importance of these early injuries as red flags of abuse and to change the way nurses, other HCPs, mandatory reporters, and parents think about them (L. Sheets, personal communication, September 22, 2017).

The word *sentinel* suggests military action because it speaks to the need for vigilance or standing guard (Merriam-Webster, 2022). Within health care, The Joint Commission (TJC) defined sentinel events as unanticipated events resulting in patient death, permanent harm, or life-threatening temporary harm. To protect patients, occurrence of a sentinel event signals the need for immediate investigation and response (TJC, 2022). Likewise, SIs of child abuse signal a need for vigilance and urgent response. In addition to being temporary injuries, SIs may be the only symptom of abuse in an otherwise healthy-appearing infant (Petska & Sheets, 2014). Consequently, an infant with an SI should be screened for occult (not readily visible) injuries of abuse. Occult injuries of child abuse may include fractures, retinal hemorrhages, intracranial hemorrhages, and solid organ injuries (Lindberg et al., 2015). When SIs are not recognized and reported, infants are at risk for ongoing and potentially escalating abuse (Feldman et al., 2020; Letson et al., 2016; Pierce et

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al., 2017; Sheets et al., 2013).

Although the term SI is new (Sheets et al., 2013), the relationship between bruising and abuse in young infants was noted over 20 years ago. Sugar and colleagues (1999) investigated the prevalence of non-inflicted bruising among a population of 973 healthy children age 0 to 36 months to determine if bruising in pre-mobile infants should be considered a sign of abuse. Among 473 infants less than age 9 months, only six infants (1.7%) had bruises (Sugar et al., 1999). When this group of infants was looked at more specifically by age, only two of 366 infants (0.6%) less than age 6 months had bruising. These results provided evidence that bruising is uncommon among pre-mobile infants. In contrast, bruising is common in abused infants. Several researchers have reported prevalence of bruising in abused infants ranging from 11.7% (14 of 120) (Letson et al., 2016), 22% (44 of 200) (Sheets et al., 2013), and 50% (73 of 146) (Harper et al., 2014) to 64.3% (9 of 14) (Pierce et al., 2017). Although 11% to 64.3% is a broad range, all are significantly higher than the 0.6% and 1.7% identified in healthy infants (Sugar et al., 1999). Nurses should recognize these findings need further evaluation because bruising is rare in pre-mobile infants.

After child abuse or unintentional injury, a differential diagnosis for bruising in young infants is an underlying bleeding disorder. Although possible, bleeding disorders are rarely identified as a cause for bruising in infants. In a study by Harper and colleagues (2014), 70.5% (103 of 146) of infants presenting with isolated bruising were evaluated for bleeding disorders, and none of the infants had an underlying bleeding disorder.

Intra-oral injuries (frenulum tears and sublingual bruising) are also SIs because they are often caused by an object, for example, a bottle or pacifier, being forcefully pushed into an infant's mouth. Sheets and colleagues (2013) found 11% (22 of 200) of abused infants with SIs had intra-oral injuries, while 22% (44 of 200) in the same cohort had bruises (some infants presented with both). Few studies are specific to the identification and evaluation of intra-oral injuries because their significance is usually discussed in their relationship with bruising. However, unexpected intra-oral injuries in pre-mobile infants, with or without bruising, are SIs and should be referred to Child Protective Services (CPS) for suspected child abuse.

Knowledge of SIs is important to increase recognition and appropriate response from nurses and other health care providers. Child abuse researchers and behavioral theorists have identified that knowledge alone does not predict nurses' behaviors when identifying and reporting suspected child abuse. Other predictors may include implicit biases, interpersonal and interprofessional relationships, and nurses' understanding of mandatory reporting laws. Content is presented to increase knowledge of what SIs are, describe factors that influence reporting behaviors, and provide recommendations and implications for nursing practice to provide information for nurses to assist them to identify and report SIs as suspected child abuse.

Factors Influencing Reporting Behaviors

Nurses' Knowledge of SIs

Nurses and other HCPs are less familiar with the definition of SIs and their significance for abuse, although child abuse experts routinely use the language of SIs (Berger & Lindberg, 2019; Pierce et al., 2017; Sheets et al., 2013). Two recent survey studies of HCPs, one in Canada (Barrett et al., 2016) and one in the United States (Eismann et al., 2021), demonstrated that HCPs who were not child abuse experts often failed to recognize SIs and their relationship to abuse. In both studies, participants were presented with vignettes of abuse cases, including SIs, and were asked to identify if injuries were suspicious for abuse. Barrett and colleagues (2016) defined SIs as unexpected bruises and intra-oral injuries in pre-mobile infants. In this study that included general pediatric and pediatric subspecialist physicians, 378 of 582 (65%) participants identified SIs being red flags of abuse. Of the 65% of participants who identified SIs, general pediatricians were more likely to recognize SIs than pediatric subspecialists (aOR = 0.57, 95% CI 0.37-0.88, P = 0.01). Additionally, bruising was more commonly recognized (91.9%) than mouth injuries (67.2%) as SIs for all HCP participants (Barrett et al., 2016).

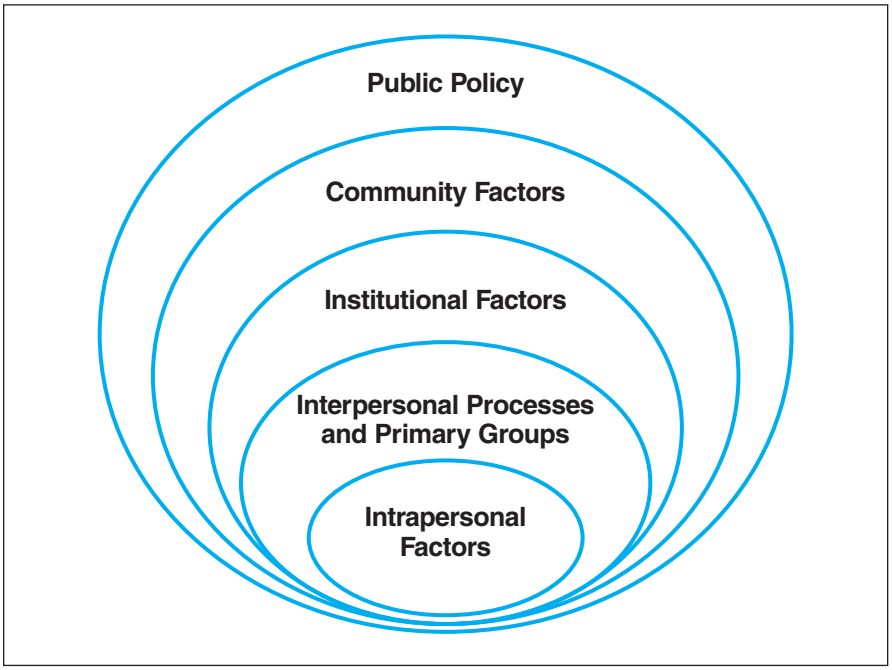
Eismann and colleagues (2021) surveyed 565 pediatric HCPs in a collaboration of six children's hospitals within one midwestern state. The study included nurses (n = 203) and nurse practitioners (n = 35), as well as attending physicians (n = 199), medical trainees (n = 69), and social workers (n = 59). Eismann and colleagues (2021) used a broader definition of SIs to include fractures, intra-cranial hemorrhages, and eye hemorrhages, in addition to bruising and intra-oral injuries. In this study, bruising was the most recognized SI (97%), and intra-oral injury was the least recognized SI (77%) (Eismann et al., 2021).

Previous researchers identified a knowledge gap regarding SIs among nurses and other HCPs (Barrett et al., 2016; Eismann et al., 2021). Addressing this knowledge gap is critical to protect infants from continued and potentially escalated abuse (Sheets et al., 2013). However, although increasing nurses' knowledge of SIs is important, child abuse researchers (Flaherty et al., 2006; Herendeen et al., 2014; Kuruppu et al., 2020; Tiyyagura et al., 2015) and behavioral theorists (McLeroy et al., 1988) have identified that knowledge alone does not predict nurses' child abuse reporting behaviors. Rather, nurses' behaviors of reporting suspected abuse, including SIs, is likely related to intrapersonal and environmental influences explained in the Ecological Model for Health Promotion (EMHP) (McLeroy et al., 1988).

Nurses' Child Abuse Reporting Behaviors Within EMHP

Nurses and other HCPs may feel conflicted about reporting SIs because these injuries are suspicious but not diagnostic for abuse (Sheets

Figure 1.
Ecological Model for Health Promotion



Source: Created by the authors from information described in McLeroy et al., 1988.

et al., 2013). The conflict regarding nurses' decisions to report or not report suspected child abuse represents the interplay between internal and external environmental influences. The EMHP (McLeroy et al., 1988) explains human behaviors are related to both internal influences and external environmental influences (McLeroy et al., 1988). Influences are labeled as factors and processes within the EMHP (McLeroy et al., 1988), and are described by different levels, from the most to least personal (see Figure 1). This model can be used to understand nurses' behaviors in identifying and reporting suspected child abuse. Reporting behaviors may reflect tensions between the levels of influence. For instance, nurses may feel conflict between their personal knowledge about SIs, their relationship with a family, and past experiences with CPS.

Intrapersonal factors on nurses' behaviors. Intrapersonal factors within the EMHP refer to individuals' unique characteristics and experiences, such as gender, age, race, education, knowledge, and past experiences (McLeroy et al., 1988). For nurses, intrapersonal factors affecting their child abuse reporting behaviors include child abuse education and past experiences with reporting suspected abuse (Herendeen et al., 2014). Additionally, one important intrapersonal factor that may affect nurses' abuse reporting behaviors are implicit biases.

Implicit biases are beliefs individuals hold unconsciously and involuntarily (Laskey, 2014; McCormick & Hymel, 2019). Implicit biases may lead to cognitive errors because individuals do not realize their biases may be affecting their attitudes and behaviors because they are subconscious (Laskey, 2014). A nurse's implicit biases when deciding to report suspected child abuse may be assuming abuse did not occur because a child lives in a "good family" (Laskey, 2014, p. 1003), or as specific as believing socioeconomic status (Laskey et al., 2012) and race/ethnicity (Hymel et al., 2018) are direct causes of child abuse. Although research does not identify universal implicit biases within child abuse reporting, nurses should consider how their implicit biases may affect their identification and reporting behaviors of suspected child abuse.

Interpersonal processes and primary groups. Interpersonal processes and primary groups within EMHP refer to influences of nurses' personal relationships with families, friends, and work colleagues on their behaviors (McLeroy et al., 1988). Nurses often value their relationships with families and may not want to upset the relationship by reporting concerns of abuse to CPS. HCPs in previous studies were concerned a CPS report would be upsetting for a child and family, but may not improve the child's and family's situation (Flaherty et al., 2006; Herendeen et al., 2014). Pediatric nurse practitioners (PNPs) reported experiences with families changing providers after being reported to CPS (Herendeen et al., 2014).

Nurses also value their relationships with professional peers. Before reporting to CPS, it is not uncommon for nurses to discuss with their peers and colleagues if an injury should be reported as suspected child abuse (Herendeen et al., 2014; Tiyyagura et al., 2015). Nurses appreciated having conversations with nurse colleagues and supervisors for practice or a run-through prior to reporting to CPS (Tiyyagura et al., 2015). However, in a study by Herendeen and colleagues (2014), discussions with other HCPs did not always support a PNP's intent to report suspected child abuse. Some PNPs were dissuaded from reporting by collaborating physicians (n = 14 of 604). In these cases, physicians either disagreed with the PNP's concerns of abuse or agreed with the PNP but felt reporting was inappropriate. This may be concerning because as each PNP is a mandatory reporter, it may not be appropriate for PNPs to allow a fellow HCP to discredit their concerns of child abuse.

Institutional factors. Institutional factors within EMHP refer to influences of individuals' relationships with formal organizations (McLeroy et al., 1988). Institutional factors affect nurses' child abuse reporting behaviors, relationships with CPS, child abuse experts, law enforcement, and attorneys (Cleek

et al., 2019). Previous experiences with professionals from other institutions may affect HCPs' child abuse reporting behaviors. For example, many HCPs, including nurses and PNPs, viewed past experiences with CPS as negative. Concerns about CPS were related to being time-intensive, doubting the child and family benefitted from the CPS referral (Tiyyagura et al., 2015), and lacking follow up from CPS (Cleek et al., 2019; Tiyyagura et al., 2015). Consequently, some HCPs intended to manage cases of suspected child abuse independently, bypassing CPS altogether (Flaherty et al., 2006; Flaherty et al., 2008; Herendeen et al., 2014). HCPs are less likely to report concerns of child abuse if they felt CPS would dismiss concerns and not investigate the complaint (Jones et al., 2008). In addition to concerns about CPS, HCPs may choose not to report suspected maltreatment to avoid engaging in the court system (Flaherty et al., 2006).

Community factors. Community factors describe how institutions work together (McLeroy et al., 1988). In child abuse investigations, these institutions include CPS, child abuse experts, law enforcement, and the court system. An example of these relationships can be identified within the Milwaukee County Joint Protocol on a Collaborative Response to Child Maltreatment (Milwaukee County Child Abuse Review Team, 2016). This protocol documents how professionals within Milwaukee County work together to effectively care for vulnerable and victimized children. Although nurses do not routinely engage within this relationship, the outcomes associated with physical abuse reporting may be related to how these organizations work together.

Public policy. Public policies include laws and policies at the national, state, and local levels that influence behavior (McLeroy et al., 1988). For nurses and other HCPs, national and state laws guide and direct child abuse reporting behaviors. Nurses are among multiple professionals who interact and engage with children during their routine workday. Given this relationship, nurses are identified as mandatory reporters of abuse, meaning they are professionals who are legally required to report suspicion of child abuse to CPS or law enforcement when there is reasonable cause to suspect abuse has occurred (Child Abuse Prevention and Treatment Act [CAPTA], 2010). Although mandatory reporting laws exist to protect children, emphasis on reasonable cause and judgment (CAPTA, 2010) may complicate nurses' decisions on when and if to report suspected abuse.

HCPs differ on identifying child abuse level of concern to the level of reasonable concern (Levi & Brown, 2005; Levi et al., 2012). In a survey of 1,249 Pennsylvania pediatricians, Levi and Brown (2005) asked what level of probability of child abuse (between 0% and 100%) constituted a reasonable suspicion of abuse. The probability of suspected abuse to constitute a reasonable suspicion ranged from 10% to 35% (35% of pediatricians), 40% to 50% (25% of pediatricians), 60% to 70% (25% of pediatricians), to greater than 75% probability (15% of pediatricians) of abuse. Similarly, child abuse experts demonstrated similar disparities in what probability of concern constituted reasonable suspicion of abuse: 6% to 35% (roughly 25% of child abuse experts), 36% to 55% chance (32% of child abuse experts), 56% to 75% chance (24% of child abuse experts), to greater than 75% (19% of child abuse experts) (Levi & Crowell, 2011). The level of reasonable cause for suspicion was intended to set the bar low for child abuse reporting (Levi & Portwood, 2011). However, lack of definition for what constitutes reasonable suspicion for when to report suspected child abuse may increase HCPs' discomfort in deciding when to report suspected child abuse. Nurses' determination of reasonable suspicion may be affected by their knowledge of child abuse and relationships at primary and institutional levels.

Recommendations and Implications for Nursing Practice

Nurses have a legal (CAPTA, 2010) and ethical (American Nurses Association, 2015) responsibility to protect children by reporting suspected child abuse. Presence of SIs, unexpected bruising, or intra-oral injury in a pre-mobile infant should compel nurses to report these injuries to CPS as concerning for child abuse (Sheets et al., 2013). Nurses can take several steps to help advocate for infants with SIs.

Be Alert for SIs

HCPs have missed recognizing SIs as red flags for abuse, at times with devastating consequences for the infant (Sheets et al., 2013). SIs are likely to be noted as incidental findings because parents may not seek care for SIs. Nurses should be alert for SIs because they may be incidental findings, seen on well-child visits, or during visits for acute illnesses. Nurses should also routinely ask parents if they have noted bruising or intra-oral injuries in their pre-mobile infants and teach parents these injuries can be signs of abuse. Parents may mistakenly think bruising and intra-oral injuries are common in young infants because they are common in older infants and children. Parents may overlook SIs as normal, trivial injuries and not recognize them as a warning sign someone may have caused inflicted injuries to their infant when they were not present (Sheets et al., 2013). Alternatively, parents may be the perpetrator, and therefore, would not disclose the injuries to a nurse or bring the SIs to the nurse's attention.

Be Aware of Implicit Biases

When identifying an SI, nurses must decide if the threshold of reasonable suspicion of abuse has been met (CAPTA, 2010). Objectively, nurses can determine this threshold by understanding the significance and relationship of SIs with child abuse (Feldman et al., 2020; Sheets et al., 2013). Additionally, nurses – and all HCPs – must recognize and acknowledge the potential for implicit biases (Laskey, 2014; McCormick & Hymel, 2019). It is prudent for nurses to acknowledge and consider if their threshold of *reasonable* is being swayed unsafely by implicit biases that may affect HCPs' under- and over-reporting of

suspected child abuse (Hymel et al., 2018; Laskey et al., 2012).

Use Non-Medical Language When Speaking with Families and CPS

Nurses may choose to tell families they are reporting their concerns to CPS (Cleek et al., 2020). If nurses choose to discuss their concerns with families, they should do so using non-medical language. Nurses may ask families if they know how the bruise or intra-oral injury occurred. When inquiring, nurses should use words like "bruise" and "an injury in the mouth," not "contusions" or "intra-oral injury." If nurses have concerns about a family's history, they should not provide the family with a potential explanation for the injuries the family might subsequently provide to CPS and law enforcement (Cleek et al., 2020).

Child abuse reporting laws may vary by state (Children's Bureau, 2020). For example, nurses in Wisconsin report their concerns of child abuse in the county where the child resides (Wisconsin Department of Children and Families [DCFS], 2021). Nurses should use non-medical terminology when calling in concerns to CPS. CPS workers are not always familiar with medical terminology, including SIs. Therefore, nurses should use similar language used with families and explain why the SI is concerning for child abuse (Cleek et al., 2020). For instance, a nurse may call in saying:

> I am calling with a concern for child abuse in a 3-month-old infant. The baby has a torn frenulum – the skin under the baby's tongue has been injured. I am concerned about abuse because these injures often occur when something is forcefully pushed into the baby's mouth.

The nurse should then anticipate clarifying questions to ensure the concerns are fully understood by CPS (Cleek et al., 2020).

Use Colleagues as a Resource

Nurses may find reporting suspected child abuse uncomfortable. It is common for nurses to consult with their colleagues prior to reporting suspected abuse (Herendeen et al., 2014; Tiyyagura et al., 2015). However, nurses must recognize it is not their responsibility to talk colleagues out of reporting (Herendeen et al., 2014). Each nurse is a mandatory reporter of suspected abuse (Child Welfare Information Gateway, 2019). Therefore, all nurses must report their concerns of suspected child abuse.

Understand the Diagnostic Work-Up

Once an SI is identified, a nurse should engage with the health care team to ensure the appropriate medical evaluation is complete. First, nurses must ensure their own documentation is thorough and accurate, documenting in non-judgmental language all SIs and provided history for injuries. Further evaluations may be directed by child abuse experts when health care teams have access to these experts (Christian, 2015). Additionally, the American Academy of Pediatrics recommends comprehensive laboratory and radiologic evaluations for infants presenting with SIs (Christian, 2015). Suggested laboratory work includes a complete blood count, platelets, pro time test, international normalized ratio, a partial thromboplastin time test, von Willebrand factor (vWF) antigen test, vWF activity, factor VIII level, and factor IX levels (Christian, 2015). This blood work may assist in identifying an underlying bleeding disorder. Further, any pre-mobile infant with SIs should receive a skeletal survey to evaluate for fractures and brain imaging with any suspicious bruising. Subsequently, an infant with abnormal findings should then be referred to pediatric subspecialists as indicated (Christian, 2015). Nurses need to understand clinical evaluations required in suspected child abuse so they can work with the health care team, and communicate with and provide education for families about this process.

Understand the CPS Process

CPS processes may vary by state. The reporting process in Wisconsin serves as an example (Wisconsin DCFS, 2020). Once a nurse decides to report concerns of child abuse, the call is made to the county CPS access center. This call will involve the nurse explaining the concerns to the intake worker. The intake worker will assess for child safety. If concerned about the child's physical safety, CPS will report to the child's home within 24 hours. An Initial Assessment Period will occur over 60 days. After 60 days, CPS will decide whether to continue with services for the family (Wisconsin DCFS, 2021).

It is important nurses understand CPS may not always respond to reported concerns the way nurses would like (Cleek et al., 2020). CPS has a threshold of safety that must occur prior to intervening and may not always align with nurses' concerns for children's well-being (Cleek et al., 2020). Nurses must recognize these perceived differences, so they can respect CPS' actions and maintain strong relationships with their CPS colleagues (Cleek et al., 2020). However, nurses can minimize these differences with CPS by ensuring they explain their SI findings in plain language and by ensuring CPS workers are also aware of the predictive relationship between SIs and child abuse.

Conclusion

Nurses have the responsibility to protect and promote the health of children. One way to protect children and promote their immediate and lifelong health is identifying and reporting suspected child abuse. SIs in particular offer nurses one of the earliest opportunities to identify and report suspected child abuse (Sheets et al., 2013). Although reporting these injuries to CPS may be intimidating for nurses (Tiyyagura et al., 2015), this process can be made easier when nurses recognize SIs as concerning for abuse (Sheets et al., 2013) and communicate these concerns effectively with families, colleagues, and CPS (Cleek et al., 2020).

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