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Pick Your Poison: What's New in Poison Control for the Preschooler



Lauren Glenn RN, CPNP*

Columbia University School of Nursing, New York, NY

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Accidental childhood poisonings are a major public health concern despite many efforts to alleviate this problem. While the rate of pediatric fatalities due to poisonings have decreased over the last two decades, poison control centers around the US have collectively fielded over one million calls with regard to toxic exposures in the preschool age group. According to the American Association of Poison Control Centers nearly half of all human exposures reported last year involved children under six. By focusing poison prevention efforts on the preschooler, we can attempt to decrease morbidity and mortality in the most vulnerable age group affected. Although the subject is still prevalent, current discussion on this topic is limited. Newer literature discusses past initiatives such as child resistant packaging and sticker deterrent programs and addresses their efficacy. This article revisits older mechanisms of prevention as well as the science behind the human motivation to change one's own practice and behavior.

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AS DECADES OF research on this topic have uncovered, the modality of prevention of childhood accidents and specifically, poisoning, relies upon educating parents and other caregivers on how to keep dangerous products out of kids' hands. Whether this has been effective still remains a question. Although anticipatory guidance and specific instruction are provided, children still present to the emergency room every year with accidental contact with toxic substances (Franklin & Rodgers, 2008). Poisoning ranks as the fifth most common cause of fatality worldwide in children younger than five (Kendrick et al., 2008). The question now is, how can we as healthcare providers, be more effective in our instruction so that the outcomes of prevention are improved? Staying abreast of the latest literature of toxicities reported on pediatric patients and

educating caregivers is paramount. Questioning current methods and examining older literature should be a part of the process. One theory is to start by looking at parents' perception of harm and the motivation behind their decision-making (Beirens, van Beeck, Brug, den Hertog, & Raat, 2010; Rosenberg, Wood, Leeds, & Wicks, 2011).

Parents' Perceptions

When delving into the topic of accidental poisoning, there are multiple components identified that contribute to the problem. Healthcare providers educate about prevention of accidental poisonings to parents as part of anticipatory guidance for the preschool age as part of primary care. Parents and other caregivers play an integral role along the continual approach to preventing accidental poisonings. However as research shows, well meaning parents do not necessarily incorporate all of the preventative measures that are advised (Beirens et al., 2010; Lee et al., 2012). It makes

* Corresponding author: Lauren Glenn, RN, PNP.
E-mail address: glennl@etsu.edu.

sense then, to consider why parents do what they do when trying to protect their children. Two behavioral theories, the protection motivation theory and the health belief model, have been utilized to examine parental decision-making regarding this topic.

The protection motivation theory is one behavioral theory that has been studied to ascertain the incentive for parent's decisions regarding how to safely protect their children from harmful substances around the home (Beirens et al., 2010). This theory investigates four components of motivation: severity of the perceived threat, personal vulnerability to that threat, perceived efficacy of the solution, and the self confidence in oneself to accomplish the solution (Beirens et al., 2010). One study applied this theory by asking parents of toddlers which products they perceived as most harmful and which they locked away safely. Parents' self-reported behaviors indicated that household cleaners and medications were the most dangerous toxins. Consequently, those items were more likely to be locked away or placed in a safe area. The parents that recognized medications and cleaning products as potentially harmful but did not properly store them, failed to identify them as harmful enough to lock away. Researchers found that the protection motivation theory, which bypasses race, gender, and socioeconomic status, was an effective model to portray this situation (Beirens et al., 2010). Low-income populations that pose socioeconomic challenges are a known risk factor, so this theory may be helpful in evaluating this group (Kendrick, Barlow, Hampshire, Polnay, & Stewart-Brown, 2009; Lee et al., 2012; Rodgers & Condurache, 2011).

The health belief model is another behavioral theory discussed in the realm of this health concern. This model accounts for perceived susceptibility of disease, perceived threat of disease, and benefits versus barriers to an intervention. Perceived external factors such as education, socioeconomic status, and personal knowledge of the disease are all considered when looking at this model (Rosenberg et al., 2011). In short, how dangerous is this threat, how likely is it that it will affect me, and does the solution actually work? Australian researchers applied this theory to a study that asked parents of children up to 4 years old about their poison prevention practices. Similar to the previous study that evaluated protection motivation, parents were more likely to lock away household cleaners and chemicals and less likely to secure over the counter (OTC) medications because they saw the household cleaners as "fatally poisonous" but did not identify the medications as harmful (Rosenberg et al., 2011). This supports the theory that if parents do not believe OTC medications are dangerous and they do not believe their children are likely to be harmed by them, then they are not likely to take aggressive precautions against their child ingesting them (Rosenberg et al., 2011).

Using these two theories, it is reasonable to suggest that parents may need to be further convinced of the harm certain toxins can cause. The study by Rosenberg et al. (2011) found that parents were well informed of the mechanisms used to

keep poisonous substances away from their kids, and less informed of common items that were "fatally poisonous." If action typically arises from motivation and the motivation is measured by the level of danger that common household items present, parents may carry out the changes needed. As evidence shows, dangerous items lying around the house do not necessarily raise a red flag to parents as harmful (Lee et al., 2012). By taking a look at some newer culprits involved in accidental ingestions, it may be easier to see why.

New Pediatric Poisoning Problems

As nurses, it is our job to keep abreast on the latest information so we can provide the right guidance to our patients and families. Potential poisons tend not to cause concern until after enough significant events are reported to make it onto the radar. In the annual report by the Centers for Disease Control, the newest items causing accidental poisonings are making news. Emergency departments are reporting poisonings due to ingestion of laundry pods, lithium ion "button" batteries, and nicotine pellets across the country in high numbers (Connolly et al., 2009; Forrester, 2012; Litovitz, Whitaker, & Clark, 2010). These items are highlighted due to their likelihood to be underestimated by caregivers regarding their potential harm.

Laundry Pods

In 2010, individual laundry detergent packets or "pods" were introduced to the U.S. market as a more compact, convenient method to package soap intended for washing machines. Over the next couple of years the product became more mainstream, but this addition to the American household eventually posed a threat. By the summer of 2012, the Center for Disease Control (CDC) began following reports of children ingesting the pods. The statistics were concerning: more than one thousand cases of poisoning by detergents were reported in 1 month and nearly half of those reported involved laundry pods (CDC, 2012). Children less than 5 years old were found to be at highest risk for poisoning, as they comprised ninety-four percent of the group affected by laundry pods (CDC, 2012). These data support the notion that these new products while convenient, are a growing national health concern (Scharman, 2012).

A 2012 Morbidity and Mortality report by the Center for Disease Control and Prevention described two separate incidences in North Carolina involving ingestion of laundry pods (CDC, 2012). A 20-month-old boy and a 15-month-old boy were both brought to the emergency department after ingesting the liquid portion of the packet. The 20-month-old experienced profuse vomiting, respiratory distress and a seizure. He was intubated and placed on a ventilator but subsequently improved and made a full recovery. The 15-month-old boy also

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