

Implementation of Safety Education for Window Fall Prevention in Children

Doctorate of Nursing Practice Final Project

Sarah L. Flores

California Baptist University

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Acknowledgments

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Abstract

Falls are the most common reason for childhood unintentional injury visits to the emergency department in the United States. Of these, window falls account for the most significant injury and are underrepresented in injury prevention education, leading to a lack of awareness.

Anticipatory guidance tools do not consistently address window safety at the peak age of incidence. This quality improvement project employed interprofessional collaboration to address the gap in window safety education and tools while utilizing the Model for Improvement, developed by Associates in Press. This study aims to demonstrate the benefit of aligning primary care anticipatory guidance practices with local trauma injury trends and creating multimodal actionable interventions based on identified risk factors from data collected from 2015-2020. Outcomes for this 18-month initiative were designed to increase awareness of the incidence of pediatric window falls, improve the delivery of window safety education, and provide injury prevention education and window safety resources through interprofessional collaboration. Future recommendations for this study include advancing window safety legislation in California and potentially in the nation for health care providers to implement window safety education, engineering, and enforcement, which are the three E's of injury prevention.

Keywords: pediatric, unintentional window falls, injury prevention, anticipatory guidance

Executive Summary

Falls are the most common reason for childhood unintentional injury visits to the emergency department in the United States (Centers for Disease Control and Prevention [CDC], 2019). Of these, window falls account for the most significant injury and are underrepresented in injury prevention education, leading to a lack of awareness (Chaudhary, Pomerantz, Miller, Pan, & Agarwal, 2017). Anticipatory guidance tools do not consistently address window safety at the peak age of incidence (Hagan, Shaw, & Duncan, 2017; Hammig & Jozkowski, 2015a).

In Orange County, California (CA), pediatric window falls disproportionately affect those of lower socioeconomic status living in older, multi-story units (Loudon et al., 2020). The Bible directly addresses individual and corporate responsibility as Christians to care for the needs of neighbors. Proverbs 3:27 instructs Christians, “Do not withhold good from those to whom it is due, when it is in your power to act” (New International Version [NIV]). This quality improvement project employed interprofessional collaboration to address the gap in window safety education and tools while utilizing the Model for Improvement, developed by Associates in Press (Institute for Healthcare Improvement [IHI], n.d.).

The setting of this project was the primary care network, with pediatric providers as the audience for intervention. Outcomes for this 18-month initiative were designed to include increasing awareness of the incidence of pediatric window falls, improving the delivery of window safety education, and providing injury prevention education and window safety resources through interprofessional collaboration. This study aims to demonstrate the benefit of aligning primary care anticipatory guidance practices with local trauma injury trends and creating multimodal actionable interventions, which are based on identified risk factors from data collected from 2015-2020.

Problem Statement and Significance

Problem Statement

In the United States, the most common reason for childhood unintentional injury visits to the emergency department is falls (CDC, 2019). Of these, window falls are stated to account for the most significant cause of injury and mortality. A literature review indicates that window falls are underrepresented in injury prevention education, leading to a lack of awareness among pediatric providers (Chaudhary et al., 2017). It was found that anticipatory guidance (AG) tools do not consistently address window safety at the peak age of incidence identified as two years old (Hagan et al., 2017; Hammig & Jozkowski, 2015a). In the absence of prompting to discuss window safety at the 18-months and 24-months well-child visits, pediatric providers may be missing a focal opportunity to provide essential timely and targeted safety education.

Significance

Unintentional falls are the leading cause of nonfatal injuries for children in the United States (CDC, 2019; Consumer Product Safety Commission [CPSC], 2018). This group estimates that in children younger than five years old, 3,300 injuries result specifically from falls from windows annually in the United States and account for the most significant morbidity (CPSC, 2018). However, it is noted by researchers that, in the United States, digital and mass media campaigns and legislative policy efforts have focused primarily on other unintentional pediatric injury topics, such as water, motor vehicle, and gun safety, and return to school/play after concussion (Chaudhary et al., 2017).

The American Academy of Pediatrics (AAP) recommends maintaining a schedule of checkup appointments with the pediatric healthcare provider, known as well-child visits (WCV) (American Academy of Pediatrics [AAP], 2019). The WCVs address disease detection and

prevention, health promotion, and AG (Hagan et al., 2017). AG is described as “the process in which child health care professionals anticipate emerging issues that a child and family may face and provide guidance” (p.8). AG includes injury prevention education based on results of risk screening and established guidelines. Studies suggest that primary care pediatricians may not consistently be addressing window safety during AG because of time limitations, competing priorities, a lack of awareness of the urgency, and reduced self-efficacy when asked to educate on the wide variety of injury prevention topics (Gittelman, Denny, Anzeljc, Fitzgerald, & Wervey-Arnold, 2015; Gittelman, Carle, Denney, Anzeljc, & Wervey-Arnold, 2018). The AAP has published the *Bright Future Guidelines* to support pediatric healthcare providers while delivering routine care. In CA, the Medi-Cal program adopted the *Bright Futures Guidelines* as the standard of care in the state (AAP, 2021). The guidelines include advice for window safety education at 12 months and three years old; however, not during the period leading up to and including the identified peak of incidence and injury of 24 months (Hagan et al., 2017). A survey of related literature indicates that there continues to be a significant need for data-driven strategies designed to improve window safety education, particularly for caretakers of children aged 18 to 24 months.

Environmental Context

This quality improvement (QI) project was implemented at an extensive urban health care system with dedicated pediatric services in Southern CA. This comprehensive health care system has developed a network of 20 pediatric primary care office locations designed to support the provision of ambulatory services both in Orange and Los Angeles, CA counties (Children’s Health of Orange County [CHOC], n.d.).

Orange County, CA is the primary service area for the health care system. It is estimated that 45.5% of the 3.19 million residents in Orange County are non-English language speakers (DataUSA, n.d.). The five largest ethnic groups identified in Orange County are listed in Table 1.

Table 1

Five Largest Ethnic Groups in Orange County

Ethnicity	%
White (Non-Hispanic)	39.9
Asian	20.7
White (Hispanic)	20.5
Some Other Race (Hispanic)	11.6
Two or More Races (Non-Hispanic)	2.81

A community health needs assessment done by the Children's Health of Orange (CHOC) found that children (0-18 years old) comprise 22.1% of Orange County residents. Of these, 49.4% report Latino/Hispanic origin (CHOC, 2019). Although Orange County is stated to be one of the wealthier counties in CA, data suggests that 11.5% of the population live at or below the poverty line (DataUSA, n.d.). The organization's 2018 annual report detailed the payer mix as 60% government-funded and 40% commercial (CHOC, 2018), indicating that the organization serves a large population earning an income level low enough to qualify for state Medicaid insurance.

Between January 2015 and December 2020, 98 children 15 years old and younger were assessed in the hospital emergency department (ED) for falls from windows, representing the fourth most common mechanism of injury at presentation to the ED and equating to 5% of the total volume for this single injury mechanism. Subsequently, 63% were admitted to the hospital

for stabilization of injuries, including surgical intervention. It was found that in this hospital cohort, the window falls resulted in substantial morbidity and mortality and resulted in over \$4.2 million dollars in preventable costs to the healthcare system for initial encounters only, excluding follow-up care. An examination of claims data by the primary Medi-Cal administrator in Orange County, CHOC Health Alliance (CHA), identified an additional 19 patients that had been evaluated outside of the organization for injuries attributed to window falls. Additionally, the Mission Hospital trauma center, an affiliate in Orange County, received 16 patients during this timeframe. Figure 1 displays window fall data by source.

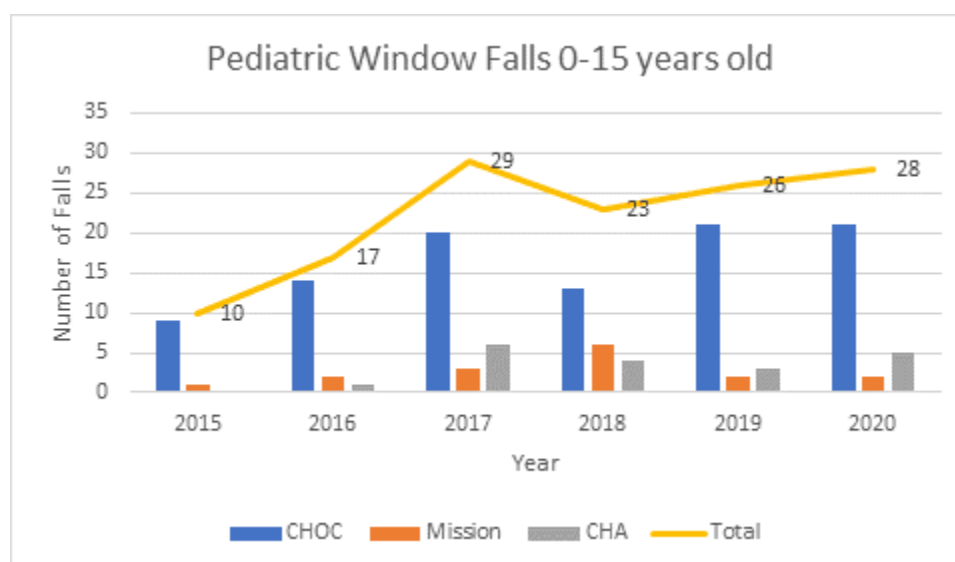


Figure 1. Unintentional pediatric window falls in children under 16 years old in Orange County, CA from 2015-2020 by the data source.

It was seen that children of lower socioeconomic status families were noted to be at higher risk for window falls. A study by Loudon et al. (2020) found that when stratified by median income, the largest proportion of window falls occurred in zip codes with the median income falling in the lower three quartiles, below \$47,811. It was further observed that Orange County, CA cities reporting higher median income with lower percentages of the population living in poverty were significantly less likely to report falls from windows. It was noted that in

2020, the CA median income was \$75,000, and the median income for Orange County was \$89,759 (DataUSA, n.d.). The distribution of unintentional pediatric window falls among Orange County, CA cities when adjusted for the pediatric population is presented in Appendix A.

Those living in poverty in Orange County, CA were found to be more likely to live in older, multi-story dwellings constructed prior to 1995 when standards for window construction were updated to specifically prevent window falls in children (Enright, 2011). Orange County data indicates that 92.9% of the housing was constructed before 1995, with just over 32% of the housing comprising multi-story dwellings (Infoplease, n.d.).

Prior to the initiation of this project, it appeared that the organization's trauma injury prevention program, community education department, and primary care leaders did not have a history of sharing data and collaborating on injury prevention or safety education efforts. Therefore, building relationships, tools, and process infrastructure was an essential focus of this project. A preliminary meeting was held in July 2020 between the researchers and the vice president and executive medical director of the primary care network. Interest in local unintentional pediatric window fall data was addressed, with participants enthusiastically supporting the creation of a QI project focused on window safety education.

Faith Foundation and Theoretical Framework

For this researcher, the Biblical mandate for advocacy and excellence in work materialized in the context of this fall prevention initiative. Undergirded by the biblical concept of serving others wholeheartedly, the Model for Improvement guided the project development, implementation, and evaluation.

Biblical Principles as a Foundation

This project carried out the biblical mandate of working diligently to pursue excellence and care for one's community. Colossians 3:23-24 reminds Christians, "Whatever you do, work heartily, as for the Lord and not for men, knowing that from the Lord you will receive the inheritance as your reward. You are serving the Lord Christ" (NIV). James 4:17 further instructs believers that, "If anyone, then, knows the good they ought to do and doesn't do it, it is a sin for them" (NIV). Christian caring is manifested through quality improvement in the pursuit of excellence. This project, therefore, aimed to enhance child safety by addressing a gap in window safety education and preventing pediatric window falls in the community. Proverbs 3:27 challenges believers, "Do not withhold good from those to whom it is due, when it is in your power to act" (NIV). The biblical precepts of advocacy and resource sharing were believed to be foundational to the project, as manifested by using demographic data to drive resource allocation aimed at meeting a previously under-recognized community need. Implementation of this QI project with the Model for Improvement aligns with the Biblical pursuit of excellence on behalf of the vulnerable pediatric population and organizational stakeholders invested in ameliorating care for the community.

The Model for Improvement

Berwick (1996) noted, "Improvement begins in our will, but to achieve improvement, we need a method for systematic change, a model for improvement" (p. 62). The Model for Improvement consists of three key questions and an iterative process for testing change. The model's simplicity is believed to suit short and long-term projects with iterative change cycles (IHI, n.d.). The first question is, "What are we trying to accomplish?" and is answered with the project purpose statement. The second question is, "How will I know if a change leads to an improvement?" and is met with the project objectives. The third question is, "What changes

could we make that would lead to an improvement?” This question is addressed through the process for testing change, identified as the Plan-Do-Study-Act (PDSA) cycle for testing and evaluating change (Berwick, 1996).

The first phase of the PDSA cycle includes planning for data gathering, planning the project or test, articulating the objectives, and making predictions about achieving the goals. Identifying stakeholders and reaching a consensus on the plan is critical (IHI, n.d.). During the second phase of the cycle for testing change, the project or test is implemented. The project team collects data on established metrics and documents problems or unexpected outcomes. Communication is essential throughout the cycle, and particularly in this phase, information is available for the team to analyze and report back to those involved in the change (IHI, n.d.). In this third phase, the data analysis is undertaken, and the outcomes are compared to the established objectives. The IHI stresses that it is essential to summarize and reflect on the new information to determine if the project or test was successful and achieved the intended objectives. Often, valuable information is said to be discovered about structure and process issues. Based on this reflection, the team decides on the next steps (IHI, n.d.). The fourth phase involves acting on the new knowledge gained. Several routes may be employed, such as refining the change and proceeding with a new iteration or disseminating the change if it is determined to be ready for application in a different area of the organization or other organizations (IHI, n.d.).

Literature Review and Evidence Synthesis

Methods

In order to investigate the phenomenon of pediatric window falls, a comprehensive review of the related literature was initially conducted for the years 2000-2019 and included initial searches in the Cumulative Index to Nursing and Allied Health Literature (CINAHL),

OneSearch, and Google Scholar. The search was limited to peer-reviewed academic journal articles published in English. Articles addressing pediatric window falls in settings other than the United States were excluded. The following search terms were used in various combinations: *child/children/youth, pediatric, falls, and windows*. Results yielded 14 pertinent articles for the initiation of the project. Ancestry searching yielded another three seminal articles that had been published prior to 2000, and also several resources related to injury prevention, window safety, and window construction were identified. The search was repeated in July 2020 and again in February 2021; one new article was identified with each subsequent search.

A second review of the literature was conducted to focus on AG at the WCV, using combinations of the search terms *anticipatory guidance, pediatric/children, injury prevention, well-child visit, and safety education*. Databases utilized included CINAHL (2010-2020), OneSearch (2010-2020), and Google Scholar (2010-2020). This second search was again limited to peer-reviewed academic journal articles published in English and studies conducted in the United States. Studies that addressed AG in settings other than the WCV were excluded. Seven research articles were identified and deemed as appropriate for this portion of the project.

In an effort to identify published literature addressing coordination of injury prevention efforts between the trauma injury prevention program and primary care providers, a third focused literature review search was conducted through OneSearch (2011-2021) used keywords *trauma, injury prevention, primary care, and coordination and continuity of care*. This search was limited to peer-reviewed academic journal articles published in English. Eight articles were identified in the three categories of social media/community messaging, injury prevention counseling in the pediatric primary care office, and trauma system performance improvement initiatives.

Synthesis

An examination of over 40 years of literature in the United States provided historical insights into pediatric falls from windows and public health interventions associated with decreased rates of falls. Several themes emerged, including identifying similarities in the epidemiological distribution of falls from windows, the window characteristics associated with increased risk of falls, gaps in AG, and public health interventions aimed at decreasing the risk of fall-related injuries in children.

Epidemiological Distribution of Falls.

While most fall-related injuries were categorized as nonfatal, the United States reported 548 pediatric fall fatalities in youth less than 15 years old from 2010-2019 (CDC Web-based Injury Statistics Query and Reporting System [WISQARS], n.d.a). Most of the fall-related deaths occurred in urban areas, as contrasted with rural settings. Between 2010-2019, CA was noted to be among the states with the highest number of deaths resulting from falls (CDC WISQARS, n.d.a).

From 2010-2019, infants and toddlers aged four and under had the highest rate of nonfatal fall injuries, and injuries related to a fall from a height are documented to be the most common cause of injury-related hospitalizations in this age group (CDC WISQARS, n.d.b; Pomerantz, Gittelman, Hornung, & Husseinadeh, 2012). Previous studies have indicated that the incidence of window falls, in particular, seems to be higher in low-income neighborhoods (AAP, 2001; Pressley & Barlow, 2005; Vish et al., 2005). Furthermore, studies have consistently identified that boys are at higher risk than girls (Harris et al., 2011; Istre et al., 2003; Kocak et al., 2012; Pressley & Barlow, 2005; Vish et al., 2005). Additionally, most falls from windows were found to occur in the summer months, around mealtimes, with a peak noted in

children around 24 months of age (AAP, 2001; Harris et al., 2011; Istre et al., 2003; Kocak et al., 2012). Younger children (birth to four years old) were seen to be more likely to fall headfirst and sustain head trauma. School-aged children tended to sustain more injuries to the trunk and extremities, with head injury also present (Harris et al., 2011; Loftus, Rhine, Wade, & Pomerantz, 2018).

Characteristics of Risk Factors.

There appears to be limited research data on the environmental conditions and parental supervision patterns associated with window falls. In a 2005 study, Vish et al. reported that more than 50% of falls occurred while a parent was present in the home/apartment, and 34% of the falls occurred with a window screen stated to be in place. In other studies, window screens were reported to be present at the time of most window falls, yet further examination revealed that the screens were generally incapable of withstanding the static pressure of a young child leaning against the mesh (Istre et al., 2003; Johnston et al., 2011; Koppolu, 2014; Meadows-Oliver, 2010). The presence of climbable objects under a window was identified as a contributing risk factor and was reported in less than 25% of cases, although data collection on this factor was found to be inconsistent between trauma centers (Harris et al., 2011; Istre et al., 2003; Vish et al., 2005).

It is noteworthy that particular characteristics of the windows themselves appeared to increase the risk for falls. For example, Johnston et al. (2011) found that horizontal sliders posed more threat for window falls due to the ease of opening beyond four inches, the minimum width needed for a toddler to fit through. Additionally, windows with sills approximately six inches deep or more increased the risk for toddlers sitting or standing on the sill. Double-hung windows that opened from the base were possibly more easily accessible than those that opened from the

top, particularly if the windowsill was found to be within two feet of the floor or if the window opened more than four inches (Istre et al., 2003; Meadows-Oliver, 2010). Finally, in residences with smaller square footage, it was seen that furniture is more likely to be placed directly under the window, thereby facilitating access to and possibly contributing to falls from windows (Harris, Rochette, & Smith, 2011; Istre et al., 2003; Vish, Powell, Wiltsek, & Sheehan, 2005).

Public Health Interventions.

Window guards and window stops were determined to be relatively inexpensive devices that could easily be installed and are designed and tested to prevent children from falling from a window. Koppolu (2014) found that no overarching policy or building code exists in the United States mandating the placement of window guards on windows that meet the criteria for increased fall risk, specifically those constructed before 1995. Community education campaigns using mass media (television, radio, print ads, and billboards) highlighting the risk of climbing and playing near windows paired with enforcement of installation of window guards or locks have been successful in decreasing the incidence of pediatric falls from windows in New York City and Boston (Vish et al., 2005). Vish et al. (2005) noted that in 1972, New York City implemented a media awareness campaign to educate parents called “Children Can’t Fly,” coupled with the distribution of free window guards. Four years later, a municipal health code was added, which required that owners of multiple unit buildings where children 10 years and under lived provide window guards, stipulating property owner compliance by 1979. A follow-up study performed in New York City 20 years after window guard legislation demonstrated that rates of fire-related deaths did not increase over this time, alleviating fears that guards could prevent egress in the event of a fire (Bijur & Spiegel, 1996). These combined efforts resulted in a 96% decrease in hospital admissions for unintentional falls from windows (Barlow,

Niernnirska, Gandhi, & Leblanc, 1983). Vish et al. (2005) noted that Boston followed with an educational campaign and voluntary ordinances encouraging property owners to install window guards. That campaign enlisted active involvement of property management agencies and owners by reimbursing the cost of window guard installation and resulted in an 83% decrease in documented window falls in the two years of surveillance after program implementation (Vish et al., 2005).

In 2007, Minnesota passed statewide window fall prevention legislation, only the second state in the United States to do so after New Jersey in 2006. Entitled Laela's Law, it required the Minnesota Department of Health to provide directed education on residential window safety and window safety requirements (Minnesota Department of Health [MDH], 2008). Furthermore, the law requires the attachment of safety screens, guards, or fall prevention devices in new or replacement windows above the first story in most apartment and multi-dwelling unit buildings (MDH, 2008). Laela's Law and the resultant social media campaign appear to have become a model for other state and municipal legislation.

Safety Education.

Several studies indicated that safety education at the WCV might be inconsistent and superficial due to lack of time at the appointment or lack of provider knowledge or confidence in counseling skills (Brixey et al., 2014; Gittelman, Carle, Denney, Anzeljc, & Arnold, 2018; Hammig & Jozkowski, 2015a). Hammig and Jozkowski (2015a) posited that injury prevention education is complex, given the wide range of injuries and the varied circumstantial factors that may contribute to the risk. Hammig and Jozkowski (2015a) determined that training primary care providers in health education and delivery has resulted in positive outcomes and recommended shifting health education into a collaborative effort involving other healthcare

professionals. Mack et al. found in a 2015 study that action-oriented injury prevention messaging, tailored to an immediate risk related to the patient's developmental stage, and delivered face-to-face and via mobile technology were the most effective. This study also yielded data that demonstrated the importance of addressing social determinants of health while concurrently providing achievable and affordable ways for creating a safe environment for children. Safety education is an essential component of AG at the WCV, and research suggests it should occur at illness/injury-focused visits as well. Furthermore, safety education is found to be most effective when complemented by multimodal education occurring outside of the WCV and in collaboration with other healthcare team members (Hammig & Jozkowski, 2015a, 2015b).

Trauma Center Performance Improvement.

Pediatric trauma centers are uniquely positioned to study the frequency, distribution, causation, and pattern of unintentional injuries. Martin and Dorlac (2019) suggested that a performance improvement plan for a regional trauma system should address the continuum of care from prevention to rehabilitation, and use registry data to target interventions, including education, to address the needs of special populations and injury mechanisms. Several researchers noted that effective performance improvement programs include metrics with compliance thresholds and a process for evaluation (Martin & Dorlac, 2019). The importance of sharing trauma registry data with trauma program leadership and multidisciplinary committees and enlisting interested stakeholders to develop the performance improvement plan was stressed by Blackmore, Leonard, Madayag, and Bourg (2019).

Summary of Findings

Quality improvement project efforts demonstrated the effectiveness of what McDonald, Shields, and Gielen (2015) explained as the 3 E's of injury prevention: education, engineering,

and enforcement. Trauma centers are positioned to present trauma activation data and collaborate with other departments on a performance improvement initiative to address the identified injury mechanisms to benefit the community. Education is most effective when data-driven, action-oriented, tailored and timely, multimodal, and delivered as a collaborative effort across various encounters. The literature review indicates that social media alone may not effectively convey injury prevention education messaging. The AAP *Bright Futures Guidelines* introduce window safety education at 12 months and not again until the three-year WCV. With a peak incidence of injury at 24 months, education seems to be misaligned with risk factors. Engineering of the environment appears to be critical for creating layers of prevention and includes establishing building codes for safe window construction, installing window guards or locks, moving furniture away from windows, and acknowledging that a window screen is unable to support the weight of a toddler pushing against it. Enforcement includes implementing window safety public policy for window construction, safety device installation, and collaboration with property owners and code enforcement teams to facilitate compliance.

Project Purpose and Objectives

Purpose Statement

The first question in the Model for Improvement asks, “What are we trying to accomplish?” (IHI, n.d.). Based on local data trends, evidence in the literature, and opportunities within the organization, the goal of this QI project was to create window safety education for primary care providers while enabling effective delivery of AG with the aim of decreasing pediatric window falls. The project team sought to accomplish this by a) increasing the awareness of window fall incidence among pediatric network providers, b) improving in the delivery of window safety AG at the WCV for children 0-5 years old, and c) employing

interprofessional collaboration to develop injury prevention education and window safety resources.

Project Outcomes and Objectives

Project objectives addressed the second question, “How will we know that a change is an improvement?” (IHI, n.d.). The project objectives were measures developed in accordance with local data, organizational resources, and best practices identified in the literature. Objectives were drafted for each outcome and refined after initial data collection to ensure appropriate metrics and timeframe for effective project evaluation. A summary table of the project goal, outcomes, and objectives is included in Appendix B.

Methods and Implementation

Project Plan and Scope

The organization’s trauma injury prevention program, primary care network, community education department, population health, and marketing & communications were the central departments collaborating for this project in a previously unprecedented way. The core project team included this researcher, a nurse scientist, a community educator, and a trauma injury prevention coordinator. Key stakeholders from the other departments were enlisted as needed. The project plan utilized the PDSA cycle, which is the model employed by the organization for process improvement. The 18-month timeline for project development, implementation, and evaluation is detailed in Appendix C.

Plan.

During the *Plan* phase, the project team determined best practices from the literature review, developed the project protocol, enlisted stakeholders, and gathered organizational data.

These data collection activities and project tasks were essential parts of planning in advance of implementation, or the *Do* phase of the PDSA.

Protection of Human Subjects.

This quality improvement project received the support of the organization's nursing research and innovation council (Appendix D) and qualified for category 2 exemption with the hospital (Appendix E) and California Baptist University Institutional Review Boards (Appendix F). The team conducted a retrospective review of patient information in the trauma database and created aggregate reports housed on an encrypted, restricted access file within the organization's digital network.

Organizational Window Fall Data Analysis.

Analysis of the organizational trauma registry data yielded important information used to guide the development and delivery of education, when coupled with best practices ascertained from the literature review. Aligned with the trends seen in literature, falls were more common in males and younger children. The peak incidence for falls was 24 months (2 years) for both boys and girls. From this data set, 63% of cases were hospitalized for stabilization and treatment of injuries. Cities reporting a higher median income and lower poverty rates were found to be significantly less likely to report pediatric falls from windows ($p < 0.03$) (Appendix A). The cities with the highest incidence of falls were documented to have a large number of citizens who speak Spanish or Vietnamese in the home (DataUSA, n.d.).

Provider Safety Education Survey.

The research team created and launched a survey of the primary care providers (Appendix G) designed to understand the knowledge of the incidence of unintentional injury, use of the *Bright Future Guidelines*, and the delivery of safety education. This anonymous three-

item survey was distributed to 106 pediatric primary care providers in the organization's network and was administered through an encrypted, secure application. The baseline survey of the organization's primary care network providers demonstrated that 41% (26/64) reported not addressing window safety as a part of AG. Of those who reported addressing window safety, only 50% (32/64) reported discussing it at the 18-month WCV and 52% (33/64) at the 24-month visit. In addition, 83% (53/64) of providers reported using *Bright Futures Guidelines* usually or always to guide AG and safety education. These data demonstrated an opportunity for the enhancement of window safety education during the peak time of risk.

Electronic Medical Record and WCV Workflow.

Data gathering included a workflow analysis of the two-year-old WCV from registration to discharge in the electronic medical record (EMR). The primary care network employed medical assistants to review the patient chart before the WCV and comment on health promotion tasks to complete or follow-up from previous encounters. Upon checking in for a WCV, the parent/guardian was directed to complete the *Staying Healthy Assessment* (Department of Health Care Services, 2021), which screened for window fall risk at the WCV up to age five years. The form was completed on paper, and it was incumbent on the provider and parent/guardian to discuss risks identified. Automated prompts did not support the provider to discuss window safety, documentation fields for accountability, or embedded education on the EMR. Medical assistants reinforced patient education at the end of the visit by reviewing the after-visit summary with embedded education, supplemented with handouts available in the office. The WCV workflow analysis is included in Appendix H.

Do.

During the Do phase, the project team deployed window safety education to primary care providers and the community in various modalities.

Window Safety Toolkit Development and Provider Education.

The project team identified five critical tactics from literature to include in educational materials. Layers of prevention are created when caretakers

- move furniture away from windows;
- do not open a window more than 4 inches;
- install a window lock, or install a window guard;
- do not trust screens to keep kids in; and
- supervise children around open windows, and close them when not in use (Harris et al., 2011; Istre et al., 2003; Meadows-Oliver, 2010; Vish et al., 2005).

Analysis of initial data collection from the trauma registry revealed that educational materials should be published in English, Spanish, and Vietnamese to reach the populations with the highest incidence of risk. A new window safety tip sheet (Appendix I) was developed and translated. Building on the tip sheet, an organization-branded window safety activity workbook (Appendix J) was created and translated into Spanish and Vietnamese. The organization's interpreter and translation services department were utilized to facilitate an end-product consistent with other patient-family education materials. All educational material underwent a literacy review, with the final English product evaluated at a 5th-grade reading level. In addition to creatively presenting the simple injury prevention actions, the back of the booklet was imprinted with an image of a 4-inch ruler to provide a tool for measuring the maximum recommended window opening and placement for the window lock. Window locks were

purchased with grant funds and distributed to the provider offices with the tip sheet and workbook, completing the action-oriented education toolkit.

Subsequently, the project team created education for the healthcare team regarding window fall incidence, window safety messaging, and the use of the patient education toolkit. The educational materials were distributed via the organization's learning management system (LMS) to the emergency department, community education, and high-risk infant follow-up program staff. A cloud link was established at www.choceducation.org/chex/2021/WindowFalls/index.html to educate the primary care network staff, including practice managers, supervisors, medical assistants, nurses, and providers.

The project team coordinated with the departments of primary care, population health, and marketing and communications to launch the window safety education in honor of National Window Safety Week 2021. During the months of April through June 2021, education was provided virtually at office manager meetings and the primary care network board of director provider meetings. Toolkits were distributed among the 20 primary care practice locations according to the volume of patients under three years old seen, payer, and language demographics. On-the-spot training was provided during toolkit distribution in June 2021. Additionally, the team developed an inventory log with a quick-response (QR) code/link access for sites to document usage and assist with the timely distribution of remaining supplies. A guideline to reordering supplies was provided for the practices to promote the sustainability of the project.

Electronic Medical Record Documentation Optimization.

The workflow analysis determined that there was an opportunity to optimize primary care provider documentation of window safety education in the *history of present illness* section of WCV documentation, which includes a review of safety concerns based on the Staying Healthy Assessment tool. The safety topic *window fall risk* was added to the safety section with auto texts for counseling provided. The WCV patient instruction auto text was updated to include four window safety teaching points. The provider education handout related to EMR optimization is presented in Appendix K.

Following established WCV standards of care, medical assistants were responsible for reviewing upcoming appointments and making a notation for the provider on the visit encounter of any tasks to be completed at the WCV. The standard work process was updated to include a provider reminder to review window fall risk and window safety education at the 18 and 24-month WCVs. Integration of screening for window safety education into the standard work process was intended to socialize window safety education and to support provider documentation.

Window Safety Website.

In collaboration with the organization's marketing and communications team, a new safety webpage, www.choc.org/safety, was created to integrate injury prevention and home safety information with links to several injury prevention topics, including window safety (Appendix L). This landing page also has links to the department pages for the trauma injury prevention program, community education, and primary care, thereby bridging those three departments. Following the link to the new window safety page, <https://www.choc.org/health-topics/window-safety/>, provides viewers with customized window safety education content, including the window safety activity booklet and tip sheets created by the project team.

Additionally, the page is a hub for all digital and social media content, which increased significantly throughout the project. During 2015-2019, there were four digital content pieces related to window fall prevention and safety education on the organization's website and social media platforms. Eight digital content features were published between January 2020 and April 2021, with additional content planned for the remainder of the year.

Electronic Greeting Card.

Planning also involved creating direct-to-consumer window safety education via an [electronic greeting card](#) (Appendix M). The electronic card (e-card) was distributed utilizing Salesforce Customer Relationship Management (CRM) software. CRM platforms take information from integrated systems, such as the EMR, scheduling, revenue cycle, website analytics, and organize it into one system (Salesforce, n.d.). The e-card included the five key actions to reduce the risk for unintentional falls from the window. For the pilot distribution, the e-card was distributed to 19,482 emails of parents/guardians for patients age five and under who had an encounter with the hospital system between 2016 and 2020.

The e-card was designed with a click-through survey, also known as a *call to action*, with the following question and multi-select response options: Did you change something in your home because of this information? 1) I moved furniture away from the window 2) I purchased or installed a window guard 3) I purchased or installed a window lock 4) I educated another parent/guardian.

Community Collaboration and Education.

Through the organization's participation in the Safe Kids Orange County coalition, Falck-Care ® Ambulance installed an ambulance wrap focused on window safety (Appendix N). This wrap has a lifetime of 10 years, with 300 million views or impressions, anticipated and

valued at 3.6 million dollars. The launch of the ambulance fleet with injury prevention messaging wraps was featured on the local news on October 14, 2020. Safe Kids Orange County facilitated participation in an injury prevention panel presentation at the Safer California 2020 conference sponsored by the California Coalition for Children's Safety and Health in November, 2020. The window safety QI project was presented during a home safety panel session at the Safe Kids Worldwide's biennial childhood injury prevention convention (PrevCon) in July, 2021.

The organization's trauma injury prevention program's affiliations afforded opportunities to participate in numerous trauma and injury prevention education events. The trauma injury prevention coordinator received a grant through the Injury Free Coalition for Kids® and utilized funding to purchase and distribute window locks and window safety tip sheets to hospital visitors on National Injury Prevention Day on November 18, 2020. In collaboration with the organization's departments of marketing and communications and community education, injury prevention posts with click-through polls were posted on the organization's social media accounts. (Screenshots and data regarding these posts are presented in Appendix O).

Data Analysis Methods- Study.

Window Safety Education.

A window safety education learning module was submitted to the organization's department of clinical education and professional development for inclusion in the organization's LMS. The module was distributed to 156 healthcare staff, of which 83% (130) completed the education within the designated timeframe. Upon completion, the staff was presented with three questions to evaluate knowledge gained, resulting attitudes pertaining to window safety

education and self-efficacy with window safety education. Descriptive statistics were used to report frequencies, and questions yielding interval data were reported with identification of mean, standard deviation, and descriptive frequency statistics. (Results are presented in Appendix P).

Electronic Medical Record Documentation Compliance.

New fields for EMR documentation of window fall screening risk and window safety education were implemented by the primary care network EMR informatics team on June 22, 2021. An audit of documentation was conducted on July 23, 2021, to assess the adoption of the recommended changes. Results from reviewing 30 WCV records indicated that screening for window fall risk occurred in 37% of visits (11/30), and window safety education was included in 40% (12/30) of after-visit summaries. Provider use of auto-text documentation of window safety education was not noted in the 30 records reviewed.

Provider Safety Education Survey.

After the dissemination of educational materials, a post-intervention survey was distributed to the providers in July 2021 by the primary care network executive medical director. Similar to the pre-intervention survey, 106 pediatric primary care network providers received an email containing a link to the survey administered through a secure platform. Of these, nineteen providers responded, with 42% (10/19) indicating failure to address window safety during one or more WCV appointments compared to the baseline of 41%. Of those reporting the application of window safety education principles, 44% (8/18) reported discussing window safety at the 18-month WCV compared to 50% at baseline, and 39% (7/18) reported discussing it at the 24-month visit compared to 52% initially. Additionally, 63% (12/19) selected *agree* or *somewhat*

agree when presented with the statement, “I am prepared to educate families about the incidence of window falls and window safety.”

Electronic Greeting Card.

Descriptive frequency statistics were used for analyzing and reporting the results of e-card data. As a pilot, benchmarks for metrics had been established according to expert consensus by the marketing and communications team. The CRM software platform reported frequencies of the following metrics: a) bounce rate, b) unsubscribe rate, c) opened rate, d) click-through rate, and e) form completion rate. (Appendix Q presents results of the distribution).

Project Evaluation- Act.

When following the Model for Improvement paradigm designated for this project, the aspect of evaluation falls into the *Act* phase, in which the team evaluated data collected during the project, created a sustainability plan, and discussed implications for future injury prevention and safety education efforts.

Finances and Resources

Resources.

This researcher and the project team pursued grants and scholarships for funding the project. An internal grant request was submitted in 2020 through the organization’s Foundation. However, the evaluation of proposals was significantly delayed beyond the project timeline as a result of the Covid-19 pandemic, and funds were not dispersed. Subsequently, this researcher applied for and secured small grant funds through professional organization scholarships. The project budget is detailed in Appendix R.

Expenses.

Labor costs represented the principal part of the project expenditures. The next largest expense resulted from the costs for the design and printing of the activity booklet. Several project costs were determined to fall within the scope of routine operations and were thereby absorbed by the organization.

Revenue and Cost Avoidance.

Digital and social media content for the project was developed to link to the primary care network's webpage to promote scheduling appointments with network pediatricians. It was determined that each WCV appointment made represented a potential yield of \$125.00 in estimated reimbursement to the organization. However, it was established that the organization's website analytics were unable to track this metric during the designated time of the project.

It appears that replication of this project in the future would likely result in cost-effectiveness for the organization. The average amount of fees incurred by the patient for treatment of injuries attributed to window falls is determined to be \$61,500.00. Therefore, the prevention of averted window fall represents a significant reduction in healthcare system costs. The long-term goal of this project is designated to be a reversal of the upward trend in falls. The avoidance of two admissions related to injuries sustained from a window fall in the calendar year is estimated to result in approximately a \$123,000.00 cost saving for the organization.

Discussion

Outcomes Analysis

The impetus for this project was the organization's recognition of pediatric window falls that became an increasingly common mechanism of injury among children aged 15 years and younger who presented to the ED. This QI project focused on education and engineering with three outcomes of interest: 1) increasing the awareness of window fall incidence among pediatric

network providers, 2) improving the delivery of window safety AG at WCV for patients 0-5 years old, and 3) facilitating interprofessional collaboration to develop injury prevention education and window safety resources. The project successfully met the goal of creating window safety education for primary care providers in order to facilitate the effective delivery of AG.

Provider Awareness of Window Fall Incidence.

After implementing the educational interventions, the provider survey indicated that the majority of primary care providers surveyed were aware of the rate of window fall incidence in Orange County, CA, and further felt enabled to address this concept of window safety education with families. Anecdotal evidence from the educational sessions confirmed that the window fall incidence had been unrecognized and was previously unknown among providers and across the organization and had not been recognized as a pertinent issue within the agencies and the pediatric populations served.

Window Safety Education Development and Delivery.

The initial provider education survey validated that the issue of window safety was not addressed sufficiently at the WCVs during the ages of peak incidence. The EMR workflow analysis also revealed gaps in resource content and accessibility. Results appear to reflect the challenges identified in the literature review concerning pediatric providers' delivery of injury prevention messaging. It was also found that equipping primary care providers with tools and information for window falls required multimodal approaches, with repetition and reinforcement over time. In accordance with evidence discovered in the literature review, the project team educated office managers and pediatric medical assistants to establish a collaborative

interprofessional approach to window safety education supported by the creation of defined fields with prompts in the EMR to guide practice.

As evidenced by the EMR audit report, the primary care providers began to employ the newly-developed documentation fields to record screening for window fall risk and the delivery of window safety education. Data gathered from the repeated safety education survey demonstrated no significant changes from pre-intervention in the overall frequency of window safety education. Survey data confirmed the need to continue efforts targeted at increasing educational input at the 18-month and 24-month WCVs. The window safety toolkit inventory reports indicated that the high-risk infant follow-up clinic has educated and provided toolkit supplies to an average of five patients each clinic day since the initial project launch of the project in 2021. Early inventory survey data indicated that one of the primary care offices had utilized resources in the three languages specified.

The educational content developed for the window safety education project was drawn from local trends in data and also reflected recommendations from the literature. The five selected window safety tactics were determined to be action-oriented and facilitated the creation of varied layers of prevention through the engineering of the home environment. The safety tip sheet and activity booklet were uploaded to the organization's intranet for ease of printing as coloring pages for in-office use or reordering in booklet form. The printed materials were also made accessible on the organization's public website and enabled community members to download and distribute educational materials. Window safety toolkits were distributed to the primary care network offices that served lower socioeconomic patients and families, and in the designated areas of the county with the highest frequency of falls.

Interprofessional Collaboration to Develop Resources.

The core members of the project team appeared to develop competence in the application of quality improvement tools and processes and in utilizing professional connections for collaborative work. Partnerships with individuals in trauma services, community education, population health, and primary care departments resulted in ameliorating a consistent, culturally relevant message drawn from local data to be transmitted to the community through direct messaging, digital web content, and WCV education. Collaboration with community agencies generated an innovative and effective messaging tactic throughout the community due to the ambulance wrap.

Implications for Practice

This QI project has demonstrated an example of using trauma-related data for the development and implementation of cogent community-based injury prevention interventions, strategically-strengthened safety education at the WCV, and digital marketing and communications content focused on community needs. The concepts of website infrastructure, direct-to-consumer messaging, and toolkit design were developed to enable scalable growth when transferred to similar injury prevention topics and the needs of the local patient population. The long-term goal for the project remained the reduction of unintentional injury, thereby protecting innocent children and avoiding preventable costs to the organization.

This project contributes to the body of knowledge addressing the use of the PDSA model for QI interventions. Building on related evidence found in the literature, it was seen that nurse leaders are uniquely positioned to ameliorate communication about preventing injuries. The PDSA model was an effective tool for project planning and the evaluation of implementation.

Several findings emerged from the project evaluation during the Act phase. It appears that further integration of primary care leadership with marketing and communication

department leaders is warranted to refine safety education concepts and electronic patient communication in the primary care setting. Primary care leaders are further enabled to maximize the impact and importance of digital communication with salient perspectives on patient experience. Additionally, utilizing staff education via the LMS in select areas of the organization yielded high completion rates for this project. The data derived from the post-education survey demonstrated positive outcomes regarding knowledge, self-efficacy, and attitudes toward the education of families regarding window fall accidents and window safety. Therefore, the dissemination of mandatory education should be considered to optimize provider and staff learning.

Plan for Sustainability

This QI project aligns with the organization's strategic goal of transforming the community through the implementation of comprehensive pediatric care and increasing awareness of the unintentional pediatric window falls for the community of interest. Injury prevention education has been identified as deficient in the organization's community health needs assessment (CHNA), and resultant partnership with other agencies for education identified within the CHNA implementation plan (CHOC, 2019).

Injury prevention and safety education concepts are within the scope of the trauma injury prevention program, community education, and primary care departments. Existing staff roles and budgets will absorb the ongoing costs for this project. It is anticipated that operational budgets may be supplemented with grants focused on community safety and injury prevention education to support the sustainability of this project. The QI project was presented to the organization's department of performance excellence, where a project plan storyboard was developed and further submitted within the first PDSA cycle. It is anticipated that the trauma

injury prevention coordinator will continue to use this storyboard for the documentation of ongoing work and outcomes evaluation of the project. The trauma injury prevention coordinator will update window fall data annually and share it internally with the primary care, population health, and marketing & communications departments. The community education department has agreed to oversee the inventory and distribution of toolkit supplies for the primary care network sites for this project. The window safety education module for staff continues to remain available on the LMS and as a cloud link.

For this project, the organization's Foundation department remains in dialogue with a local hardware store as a partner in the ongoing effort to provide at-risk communities with window locks. Preliminary discussions will include a campaign during the National Window Safety Week in April, 2022 with window locks directly distributed to community members through a voucher system. Strategies identified for maintaining digital media messaging for the community include annual window safety media campaigns each November for injury prevention month and each April for the National Window Safety Week.

Recommendations

Future replications of this developmental research project are encouraged. Ideally, future improvement of window fall prevention strategy would occur within the context of another PDSA cycle implemented by the trauma injury prevention coordinator. The primary care network would benefit from ongoing provider education and physician advocates from a QI team. It is suggested to continue data collection and relay feedback to the primary care network. Concepts to monitor include annual window fall incidence data, apparent compliance with documentation of window safety education at the WCV, and the utilization of toolkit supplies at each site. Findings related to project implementation and outcomes should be shared beyond the

organization's primary care network and with pediatric healthcare providers both at the local and national levels.

It is recommended to advocate for the inclusion of window safety education in the AG content in the *Bright Futures Guidelines* for WCVs at 18 months and 24 months. Data derived from this project indicated that the majority (83%) of providers currently rely on this set of guidelines to prompt safety education. An opportunity exists for collaboration with injury prevention advocates and additional pediatric trauma centers in CA to examine the prevalence of unintentional pediatric window falls in children ages 0-5 years across the state and demonstrate the need for consistent AG guidelines.

A related literature review supports the implementation of legislation at state and national levels to regulate the installation of window safety devices as the most comprehensive and effective prevention mechanism for window falls. Enforcement of enacted health policy and legislation is the third pillar of injury prevention, as cited by McDonald et al. (2015). Following participation in the Safer California 2020 conference, the organization's community educator was subsequently appointed to the California Coalition for Children's Safety and Health board of directors. This coalition group set a goal to introduce window safety legislation in 2022. It is recommended in the future to draft a window safety legislation proposal patterned after Minnesota's successful Laela's Law (MDH, 2007). Meetings with local legislators representing the cities with the highest incidences of unintentional pediatric window falls are targeted to facilitate the identification of a sponsor for a bill.

It has been recommended that the statistics related to the organization's unintentional window falls and the resultant QI project should be disseminated to the pediatric trauma and primary care communities. Recently, a physician-led group of authors from the organization

collaborated on a manuscript for publication addressing the epidemiology of unintentional pediatric window falls in Orange County and the associated traumatic injuries (Loudon et al., 2020). Sharing the findings of this project will add to the existing body of related literature and hereby provides support for addressing the future implementation of window safety legislation.

Conclusion

With the PDSA model serving as the guide for the implementation of change, the Model for Improvement appeared to be an effective framework for implementing this QI project that was aimed at improving the consistency and quality of AG related to prevention of window falls. This project sought to provide education and anticipatory guidance in the communities at most significant risk. The biblical principles of advocacy and equitable sharing of resources were exemplified. Through collaboration with both internal and external agency partners, innovative, multimodal education was facilitated. Preliminary data demonstrated the need for continued practice support to enhance and enable the adoption of new AG habits. Future recommendations for this study include advancing window safety legislation in CA, and potentially in the nation, in order for health care providers to fully implement the three E's of injury prevention.

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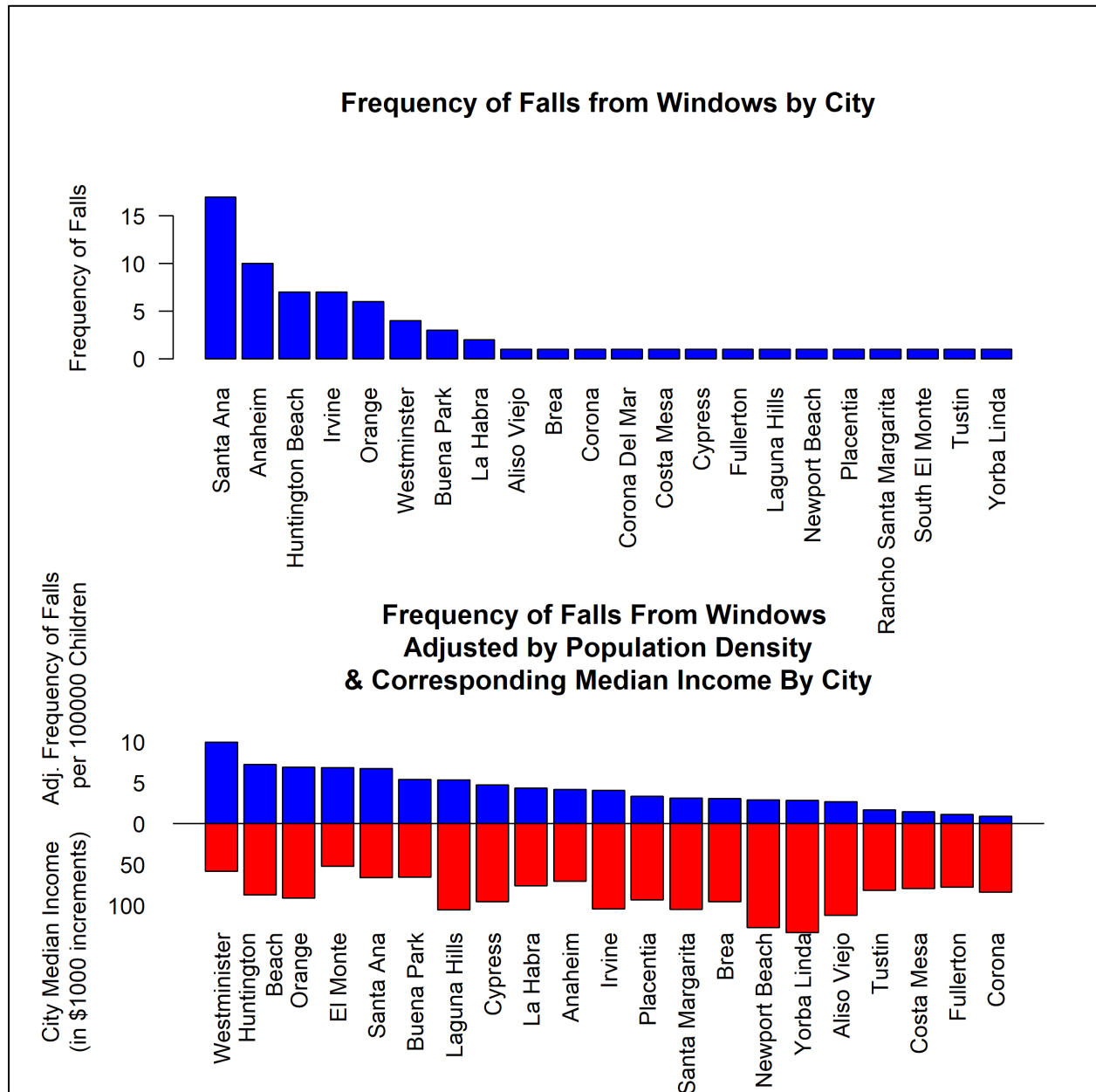
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Appendix A

Frequency of Falls from Windows, Adjusted by Population Density and Corresponding Median

Income by City



Used with permission. Credit: John Schomberg, PhD. Unpublished data. Do not distribute.

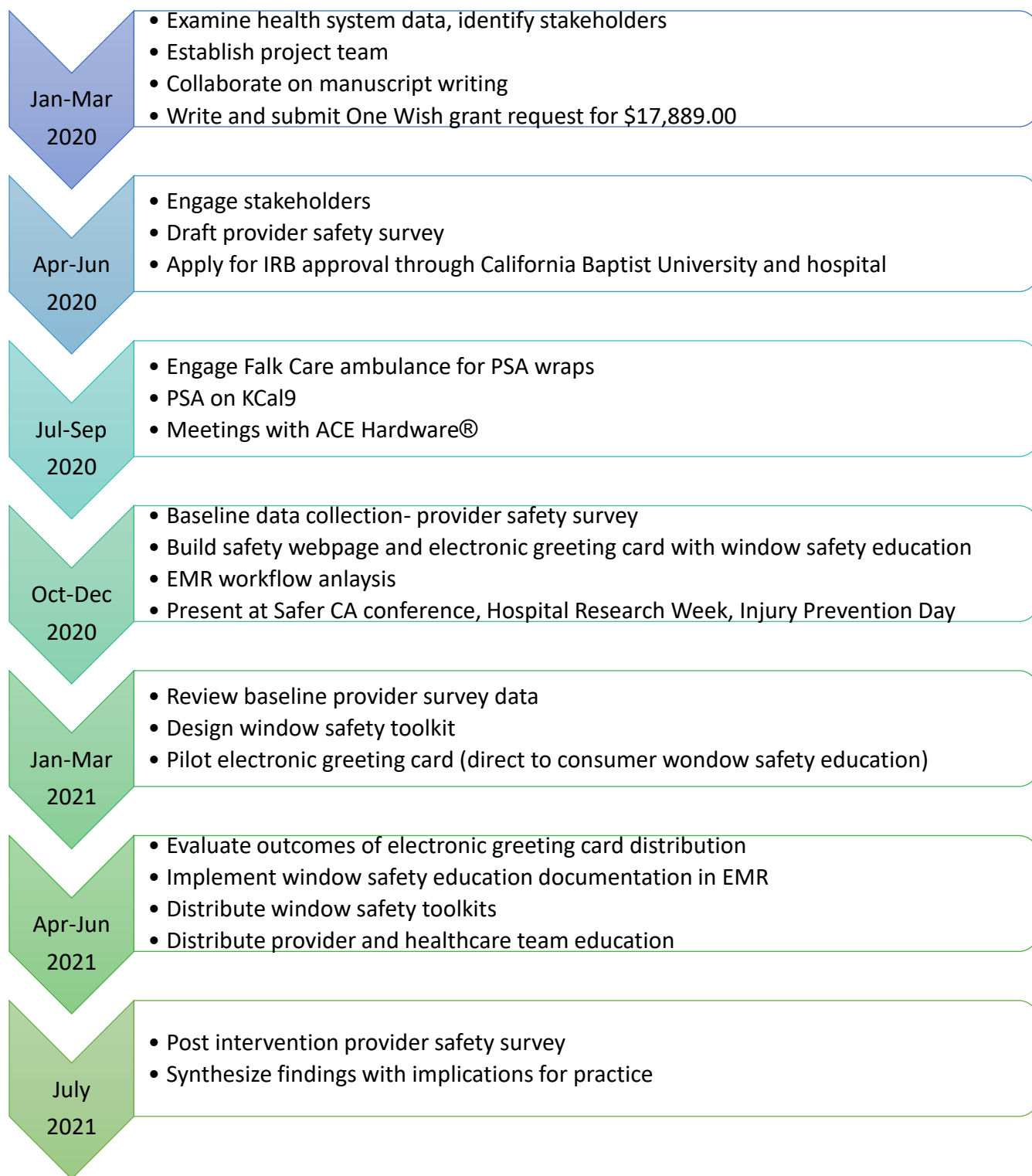
Appendix B

Project Outcomes and Objectives

Goal: create window safety education for primary care providers to facilitate effective delivery of anticipatory guidance (AG) with the aim of decreasing pediatric window falls.		
Outcome	Objective (measure)	Timeframe
Increase in the awareness of window fall incidence among pediatric network providers	80 % of providers report that they Agree/Strongly Agree with being prepared to educate on the incidence of window falls and window safety. (Provider Safety Education Survey)	By July 2021
Improvement in the delivery of window safety AG at WCV for patients 0-5 years old	<p>95% of providers will self-report the provision of AG for window safety during one or more WCV appointments. (Provider Safety Education Survey)</p> <p>80% of providers will self-report the provision of AG for window safety at the 18-month WCV. (Provider Safety Education Survey)</p> <p>80% of providers will self-report the provision of AG for window safety at the 24-month WCV. (Provider Safety Education Survey)</p> <p>10% of 18 month and 24-month WCV encounters audited demonstrate documentation of window fall risk/window safety education (EMR report)</p>	By July 2021
Interprofessional collaboration to develop injury prevention education and window safety resources	<p>Develop and distribute a tailored window safety education toolkit for primary care providers to employ (# toolkits distributed)</p> <p>Engage other departments in at least one Interprofessional window safety education activity (# activities)</p>	By April 2021
Long term: By December 2021, there will be no increase from CY 2018 in the number of ED visits for injuries attributed to unintentional falls from windows in patients 0-15 years old		

Appendix C

Project Timeline



Appendix D

CHOC Nursing Research and Innovation Council Letter of Support

NRIC Nursing IRB Submission Approval



This form is required prior to submission of nursing projects through IRB and documents formal review and approval through the Nursing Research and Innovation (NRIC) Council.

Project Name (with IRB#)	200674-Safety Education for the Prevention of Window Falls
IRB Application Type	Exempt
Project Type	Evidence-Based Quality Improvement
Principal Investigator	Sarah Flores
Co-Investigator	Makenzie Ferguson
NRIC Presentation Date	July 6, 2020
Type of Approval	<input checked="" type="checkbox"/> Full NRIC Review <input type="checkbox"/> Expedited NRIC Review
NRIC Signature	<i>J Hayakawa</i> Date: July 6, 2020
	Jennifer Hayakawa DNP, CCRN, CNRN

Any Comments or Discussion:

This study has been approved for category 2 exemption by the Nursing Research and Innovation Council and may proceed to formal IRB review.

Appendix E

CHOC Institutional Review Board Approval Letter



1201 W. La Veta Avenue
Orange, CA 92668

T 714 997 3000

W choc.org

DATE: September 2, 2020

TO: Sarah Flores, RN

FROM: Children's Hospital of Orange County In-House (CHOC IH) IRB

IRB #: 200674

STUDY TITLE: 200674-Safety Education for the Prevention of Window Falls

PROTOCOL:

SPONSOR: CHOC Children's

STUDY STATUS: EXEMPT

IRBNET ID#: 1633094-1

ACTION: DETERMINATION OF EXEMPT STATUS

LEVEL OF REVIEW: Exempt Review

MTG/ ACTION DATE: September 2, 2020

EXPIRATION DATE: September 1, 2023

REVIEW CATEGORY: Exemption category # 2

Thank you for your submission of New Project materials for this study on August 9, 2020. The Children's Hospital of Orange County In-House (CHOC IH) IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

LIST OF STUDY DOCUMENTS IN THIS PACKAGE:

- Application Form - 200674_Exemption Request_Window Fall Safety Education_rev 07272020.doc (UPDATED: 07/27/2020)
- Data Collection - 200764_REDCap Provider Survey_Safety Education_rev 07272020.docx (UPDATED: 07/27/2020)
- Investigator Agreement - 200674_Personnel Chart_Window Fall Safety Education (5).docx (UPDATED: 07/29/2020)
- Letter - 200674-NRIC Approval Form.pdf (UPDATED: 07/29/2020)
- Protocol - 200674_Exempt Protocol_Window Fall Safety Education_rev072720.docx (UPDATED: 07/27/2020)

You may proceed with your project as presented to the IRB; the exemption determination for this study expires on **September 1, 2023**. If you wish to continue your project beyond the expiration date, a new Exemption Request should be submitted at least a month prior to the expiration date to avoid any lapse in exemption determination.

Further reporting to the IRB is necessary if you wish to change study procedures (this may affect the exemption status of the project). Please inform the IRB when you have completed your study.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact The CHOC Office of Research Compliance at (714) 509-8869 or email: ORC@choc.org. Please include your Study Title and IRBNET ID # in all correspondence with this committee.

Appendix F

CBU Institutional Review Board Approval Letter



RE: IRB Review
IRB No.: 008-2021 DNP

Project: Preventing Pediatric Window Falls

Date Complete Application Received: 9/9/2020
Date Final Revision Received: N/A

Principle Investigator: Sarah Flores
Co-PI: N/A
Faculty Advisor: Karen Bradley

College/Department: CON

IRB Determination: Exempt OR Expedited Application Approved –[Faculty research using anonymous survey questionnaires; no minor participants; no more than minimal risk/risk appropriately mitigated; no deception utilized; acceptable consent procedures and documentation; acceptable data protection procedures. Data collection may begin, in accordance with the final submitted documents and approved protocol.

Waiver of Consent: Per 45 CFR 46.116, the IRB has approved waiving/altering some elements of the informed consent because the research involves no more than minimal risk to participants, the research could not be conducted without the waiver/alteration, the rights of the participants are not adversely affected with the waiver, and the researchers have provided as much information as possible to participants.

Waiver of Documentation of Consent: Per 45 CFR 46.117, the IRB has approved the request to waive the documentation of informed consent (e.g., no participant signatures will be collected, though participants do receive a copy of the consent information) because the signature of the participant would be the only linking record to the data that may harm the participant if released OR because the research is no more than minimal risk to participants and involves no procedures for which written consent is normally required outside a research context OR because the research is being conducted in a cultural context in which signing forms is not a normal/acceptable practice.

Future Correspondence: All future correspondence about this project must include all PIs, Co-PIs, and Faculty Advisors (as relevant) and reference the assigned IRB number.

Approval Information: (Expiration: Full Review Only) Approval is granted for one year from date below. If you would like to continue research activities beyond that date, you are responsible for submitting a Research Renewal Request with enough time for that request to be reviewed and approved prior to the expiration of the project. In the case of an unforeseen risk/adverse experience, please report this to the IRB immediately using the appropriate forms. Requests for a change to protocol must be submitted for IRB review and approved prior to implementation. At the completion of the project, you are to submit a Research Closure Form.

Researcher Responsibilities: The researcher is responsible for ensuring that the research is conducted in the manner outlined in the IRB application and that all reporting requirements are met. Please refer to this approval and to the IRB handbook for more information.

Date: 9/11/2021

Appendix G

Pediatric Primary Care Provider Safety Education Survey

Provider Name: _____ ☐MD ☐NP ☐PA

1) For anticipatory guidance/safety education, I follow:

Always-Usually-Sometimes-Never

- ☐ American Academy of Pediatrics Bright Futures Guidelines for Anticipatory Guidance/Safety Education
- ☐ California DHCS Staying Healthy Assessment for all ages
- ☐ CHOC Children's Periodicity Schedule
- ☐ Kid's Health
- ☐ Other: _____
- ☐ I don't know

2) I provide anticipatory guidance/safety education at the following visits:

	12 month	18 month	24 month	36 month	4 year	5 year
Car Seat/booster seat safety						
Gun Storage/Gun Safety						
Helmet Use/Bike Safety						
Poison Prevention/ Proper Storage						
Sun Safety/ Skin protection						
Water Safety/ drowning prevention						
Window Safety/ fall prevention						

3) Rank order the top five causes of **nonfatal unintentional** injury ED visits in the US among children 1-4 years old:

Struck by/Against (falling object/projectile)

Bite/Sting

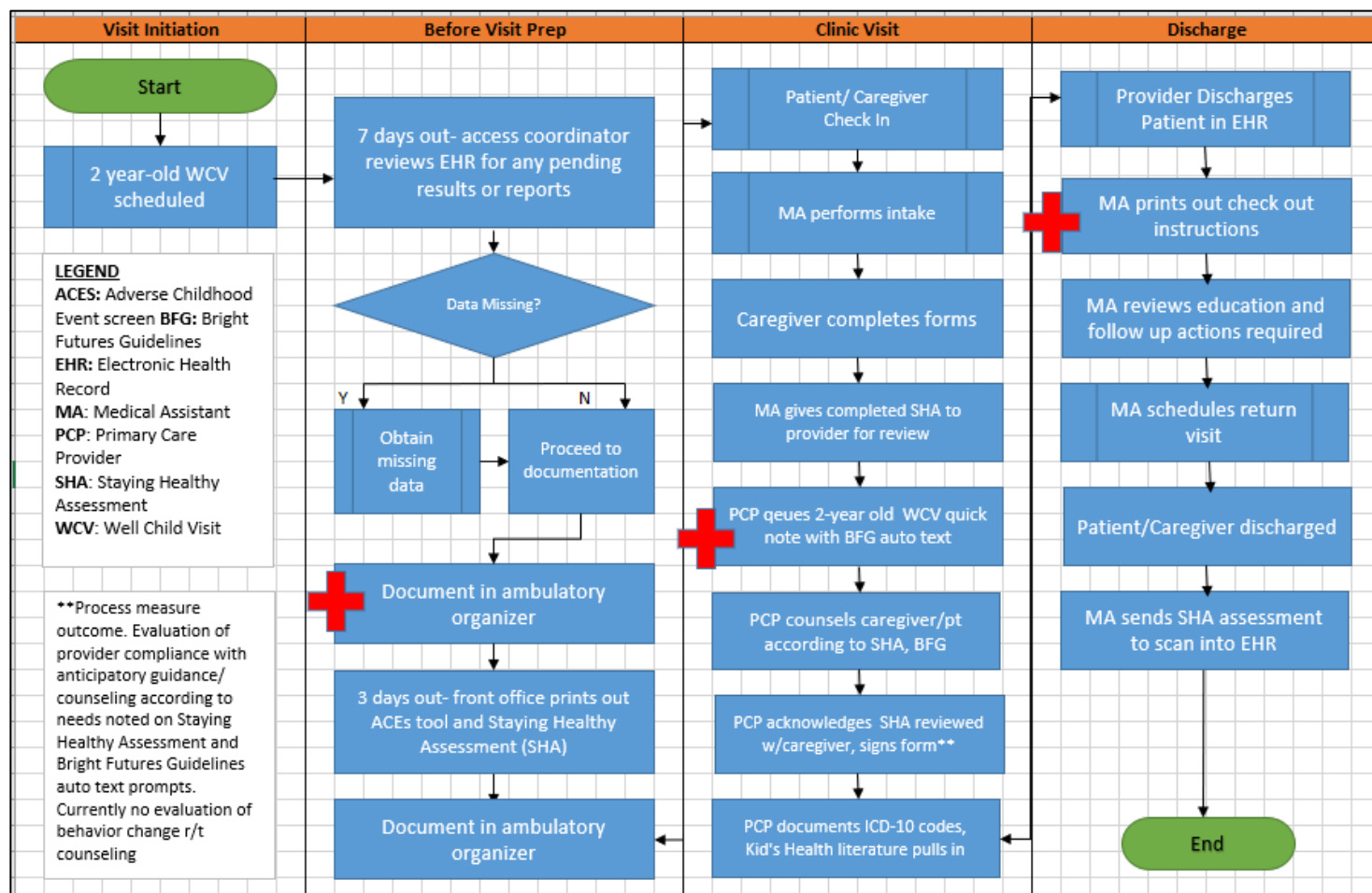
Fall (from any surface)

Cut/Pierce (self or others)

Foreign Body (in eye/nose/ear/mouth)

Appendix H

Well-Child Visit Workflow Analysis



Note. Steps in the workflow identified for optimization are indicated with the following symbol. +

Appendix I

Window Safety Tip Sheet

safetyinformation**Window Falls**

Falls from windows are dangerous and can cause injury or death. The most common reason children age 5 and younger go to the emergency room for an injury is because the child fell.

Did you know that the most common age for falls from windows is at two years old? It is never too soon to protect your children.

Here is what you can do:

- Do not trust the window screen to keep your child safely inside. Window screens are to keep bugs out. They are not strong enough to keep children in.
- Do not open a window more than **four inches**. Children can squeeze through a small opening and fall.
- Put in a window lock (see picture). This will keep the window from opening more than 4 inches. You can find these at a hardware store.



- Or, put in a window guard (see picture). This will let air flow in and out and also keep children safe. You can find these at a hardware or home improvement store.



- Move furniture away from windows. This will keep children from climbing up to the window.
- Keep windows closed and locked as much as you can.

KNOW WHERE TO GET MORE INFORMATION

When an accident happens, CHOC Children's is ready with the only pediatric-dedicated emergency department and trauma center in Orange County.

For more important tips to prevent injuries in children and teens, visit www.choc.org/safety


Appendix J


Window Safety Activity Book with Ruler Imprint



Appendix K

Provider EMR Education Handout



CERNER EMR UPDATE
 Provider 

Well Child Auto Text-Window Safety UPDATE 6/22/21

As part of the Pediatric Window Fall Prevention Initiative, updates have been made to well child auto texts.

Updated Well Child HPI Auto Texts:

`2hpi-15to18months
 `2hpi-2year
 `2hpi-3year
 `2hpi-4year

Window fall risk question has been added with a Yes/No option-defaulted to No.

Safety: No concerns▼
 Smoking at home: No▼
 Car seat: Rear facing▼
 Firearms: No▼
 Pets: No▼
 Pool: No▼
 Screen time: minimal to none▼
Window Fall Risk: No▼
 TB Exposure: None▼

Counseling reviewed on nutrition, physical activity, weight management, sleep, oral hygiene and gun safety if applicable.

Updated Well Child Patient Instruction Auto Text:

`2ptinstwcc12-toddler
 `2ptinstwcc12-toddlerSp

Window safety education item added.

1. Avoid small objects and foods that your child might choke on (nuts, hot dogs, popcorn, whole beans, chunks of raw carrot, celery or apple, whole grapes, hard candies, raisins, corn, or tough meat).
2. Don't leave your child alone around water, especially pools, buckets, the toilet or the bathtub.
3. Protect your child from falling out the window. Move furniture away from windows, do not open a window more than 4 inches and install a lock. Do not trust the screen to keep your child from falling.
4. Protect your baby from sunburn. Use sunscreen at least SPF 30 or more
5. Poison Control Center telephone number 1-800-222-1222.
6. Help him/her brush their teeth at least daily. Use a tiny amount of toothpaste with fluoride. Make him/her an appointment to see a dentist every 6 months.

Updated 06/10/2021
1 of 1

Appendix L

Window Safety Webpage

CHOC

ABOUT SERVICES I WANT TO... DONATE Search...

We remain open to provide safe care | COVID-19 Information for Patients | Visiting CHOC Locations | Telehealth Visits

Protect your child from window falls

Falls are the leading cause of unintentional injury for kids in the United States.

[Learn More](#)

Home » Health Features » Window Safety

Window Safety

IN THIS SECTION

- [Safety & Injury Prevention Home](#)
- [Safety Guides](#)
- [Safety Articles](#)
- [Safety Classes](#)
- [Safety Tip Sheets](#)
- [Programs & Partners](#)

[Free Activity Book!](#)

Every year, unintentional window falls send thousands of children ages 5 and younger to emergency departments nationwide.

At CHOC, we are determined to partner with parents to prevent unintentional injury. Window falls can cause significant injury, so that's why our experts have dedicated resources to help protect your kids and keep them safe while inside at home.

Protect Your Child From Window Falls

- **Lock it down.** Install a removable window lock or [window guard](#) to limit the opening to no more than 4 inches. Be sure it is one that may be removed quickly in the event of an emergency, such as a fire.
- **Window screens aren't enough.** Window screens may be effective for keeping bugs out of your home, but they're not strong enough to keep children in.
- **Outsmart your little "climber."** Keep beds, bookcases, play chests and other furniture away from windows.
- **If you have windows that can open from both the top and the bottom, you still need a window guard or lock.** Even if you only open the top half of the window, older children may be strong enough to open the bottom.
- **Teach your kids about window falls.** Make sure older children know the dangers of climbing out of or jumping from windows.

If your child falls out of the window, call 911 and avoid moving your child. A traumatic injury to the head, neck or spine may not be immediately obvious.

Download Window Safety Tip Sheets
[English / Spanish](#) | [English / Vietnamese](#)

MAKE AN APPOINTMENT TODAY!

Now more than ever, it's important to visit your pediatrician to keep your kids safe and healthy.

[Find a primary care office near you](#)

FREE Activity Book!

Take our brief survey and download **Choco's Window Safety Tips** activity book to print out and share with your child. This book contains coloring sheets and puzzles that will make learning about window safety fun for you and your child.

Did you make a change in your home based on the information on this page?

Check all that apply:

- ☐ I moved furniture away from the window
- ☒ I taught my family that screens are not strong enough to keep children inside the window
- ☒ I taught my family to not open windows more than 4 inches
- ☒ I installed a window lock, stop, or guard
- ☒ I taught my family to close and lock windows when not in use

Submit



Window Safety Articles



Home Safety Tips for the Whole Family

Most injuries for kids up to five years old occur in or around the home because that is where they spend the most time learning and growing. Keep in mind these home safety tips to protect kids of all ages in your home. Download this home safety checklist to help make your child's home safer. ... Continue reading

CHOC Children's Blog



Window falls and children: Lauren's story

With a New Year's Eve party a few hours away, Ruth Chi sent her 5-year-old daughter, Lauren, upstairs for a quick nap to ensure she'd have the energy needed later to ring in 2018. Ruth had just turned her attention back to party prep in the kitchen when she heard yelling upstairs. Suddenly, her eldest ... Continue reading

CHOC Children's Blog



5 ways to protect children from window falls at home

The combination of warming weather and children spending more time at home due to the COVID-19 pandemic prompts an important reminder for parents to protect kids from window falls.

CHOC Children's Blog

More Home Safety Tips

From SiriusXM's Doctor Radio – The dangers of window falls




Amy Waunch, trauma program manager at CHOC Children's, appeared on SiriusXM's Doctor Radio to discuss the dangers of window falls and offered tips on what parents can do to protect their children and what to do if you see that a child has fallen out of a window.

Appendix M

Electronic Greeting Card Pilot

View our quick tips to keep your child safeView online



Protect your child from window falls

Did you know, thousands of children age 5 and younger are sent to emergency departments due to window falls each year? Here are some quick tips to keep your kids safe:


- Install a removable lock or guard to limit the window opening.
- Keep furniture away from windows to prevent climbing.
- Teach your kids about window falls so they understand the dangers.

Get more tips at choc.org/window-safety


FREE Activity Book!

Take our *one-question* survey and download **Choco's Window Safety Tips** activity book to print out and share with your child.

TAKE SURVEY



LONG LIVE CHILDHOOD



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www.choc.org | A 501(c)(3) Organization | [Update Profile](#) | [Unsubscribe](#)

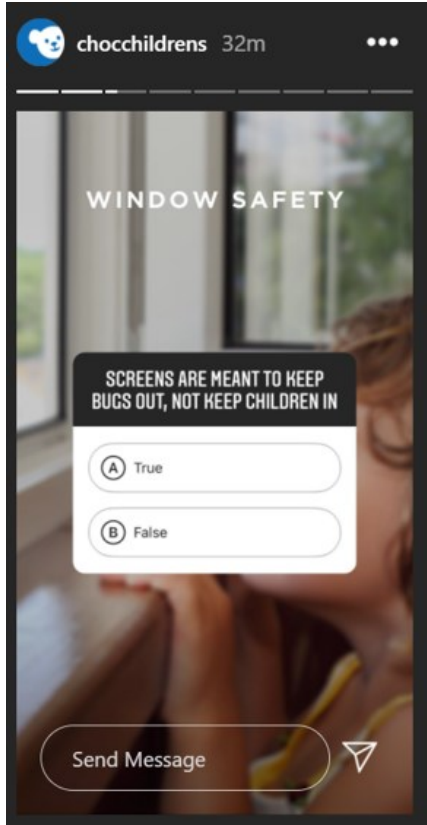
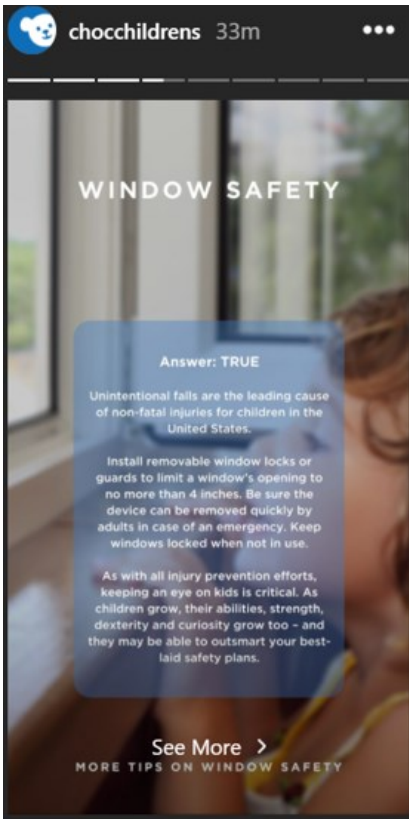
Appendix N

Falck Ambulance Injury Prevention Wraps



Appendix O

Injury Prevention Day Social Media Posts

 <p>The screenshot shows a social media post from 'chocchildrens' with a timer of 32m. The post features a background image of a child's hands near a window. The text 'WINDOW SAFETY' is at the top. Below it, a quiz question asks: 'SCREENS ARE MEANT TO KEEP BUGS OUT, NOT KEEP CHILDREN IN'. There are two options: (A) True and (B) False. At the bottom, there is a 'Send Message' button and a share icon.</p>	 <p>The screenshot shows the same social media post from 'chocchildrens' with a timer of 33m. The background image is the same. The text 'WINDOW SAFETY' is at the top. Below it, the answer is revealed: 'Answer: TRUE'. The text explains that unintentional falls are the leading cause of non-fatal injuries for children in the United States. It then provides instructions: 'Install removable window locks or guards to limit a window's opening to no more than 4 inches. Be sure the device can be removed quickly by adults in case of an emergency. Keep windows locked when not in use.' It also states: 'As with all injury prevention efforts, keeping an eye on kids is critical. As children grow, their abilities, strength, dexterity and curiosity grow too - and they may be able to outsmart your best-laid safety plans.' At the bottom, there is a 'See More >' link and the text 'MORE TIPS ON WINDOW SAFETY'.</p>
<p>Reach: 2,688 (Facebook), 2,479 (Instagram)</p> <p>https://www.instagram.com/stories/highlights/17877786013700594/</p> <p>https://blog.chocchildrens.org/5-ways-to-protect-children-from-window-falls-at-home/</p>	
<p>Impressions: The number of views</p> <p>19,541</p>	
<p>Interactions: The number of times a person clicked on a link or sent a reply</p> <p>1,597</p>	
<p>Quiz results</p> <p>418/504 correct (83%)</p>	

Appendix P

Post-Window Safety Education Survey for Healthcare Staff

Item	<i>n</i>	% Correct	<i>M</i>	<i>SD</i>
The peak age for unintentional window falls is at two years old	130	100		
I am prepared to educate families on window safety using CHOC resources	130		4.73	0.57
I feel window safety is an important injury prevention topic to discuss with families	130		4.83	0.54

Appendix Q

Electronic Greeting Card Statistics

Metric	<i>n</i>	%	Industry Benchmark %
Bounce Rate *	156	0.8%	2%
Unsubscribe Rate	39	0.2%	0.2%
Opened	3, 047	15.6%	21%
Link Clicks	78	0.4%	3%
Form Completion	26	0.1%	

Note. The *bounce rate* is calculated by subtracting the number of emails delivered from the number sent, then dividing by the number sent. In this case, $19,638 - 19,482 / 19,638$.

Appendix R

Project Budget

Window Fall Prevention Campaign Budget	
Project Costs	
Supplies	
Gift Card Incentives	-100
4 packs of locks (testing)	-37.86
1000 window locks	-1103.5
Plastic 6-quart boxes x 15	-16
Zoom @14.99 x 28 months	-419.72
Subtotal	-1677.08
Mileage	
30 miles round trip x 10 offices x .58/mile	-174
Subtotal	-174
Purchased Services	
Activity book design	-420
Spanish book design	-120
Vietnamese book design	-90
Initial pilot order 500 books	565
Printing order of 1,000 books	-2133.45
Translation	-122.19
Printing order Window Safety Tips Sheets	-75
color copies of supply re-order guide	-10
Subtotal	-2405.64
Presentation Fees	
SaferCA Conference registration	-50
Safe Kids PrevCon conference fee	-200
Subtotal	-250
Personnel	
RN @ 65/hr x 98 hours	-6370
Community Educator @35/hr x 45	-1575
Marketing Specialist @ 35/hr x 25 hours	-875
Events Manager @ 45/hr x 3 hours	-135
Digital Marketing Director @97/hr x 5 hours	-485
ISD RN Informaticist @ 65/hr x 8 hours	-520
ISD programmer @ 65/hr x 4 hours	-260
Physician Champion @ 175/hr x 5 hours	-875
Hourly Wages	-11095
Benefits @ 28%	-3107
Subtotal	-14202
Total Project Costs	-18586.5

Project Funds	
AAACN Scholarship	1000
CACN Scholarship	2000
Tuition reimbursement	1650
Injury Prevention Day Grant	250
Trauma Services In Kind Donation	650
Translation Costs Operationalized	122.19
Personnel Costs Operationalized	13082
Total Project Funds	18754.19