

26th Annual / 1st Virtual Injury Free Coalition for Kids[®] Conference

Forging New Frontiers:

**Keeping Kids Safe at Home Through COVID:
Focus on Consumer Product and Firearm Safety**



Conference Abstracts

County-Level Poverty and Disparities in Firearm-Related Mortality in U.S. Youth 5-24 Years Old

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Background:

Youth firearm deaths are a growing public health crisis in the U.S. The relationship between neighborhood poverty, a known risk factor for negative youth health outcomes, and the risk of firearm fatalities, are unknown. The objective of this study is to examine the association between county-level poverty and firearm-related fatalities in U.S. youth 5-24 years old.

Methods:

Firearm fatalities in the U.S. were analyzed from 2007-2016 using the Centers for Disease Control Compressed Mortality File. County demographics and poverty levels were obtained from the U.S. Census Bureau. We calculated annual rates per 100,000 youth 5- 24 years old. We estimated a set of multivariable negative binomial regression models with firearm death (total, homicide, suicide, and unintentional) as the dependent variable and poverty concentration (0-4.9%, 5-9.9%, 10-14.9%, 15-19.9%, and >20% living below the federal poverty level) as the independent variable, controlling for demographics of the fatalities (age, sex, race/ethnicity), county urbanicity, and estimated state-wide gun prevalence. Effects were expressed as incidence rate ratios (IRRs). We calculated the population attributable fraction (PAF: percent and number of deaths that would not have occurred if exposure risk was that of the lowest poverty counties) and years of potential life lost for each intent.

Results:

There were 67,905 firearm fatalities among youth 5-24 years old from 2007-2016 (62.6% homicides, 33.9% suicides, 2.4% unintentional). Overall firearm homicide rate was 8.5/100,000 youth in 2007 and 9.2/100,000 youth in 2016. In our multivariable model, risk for firearm mortality increased in a stepwise manner with poverty level (Figure 1).

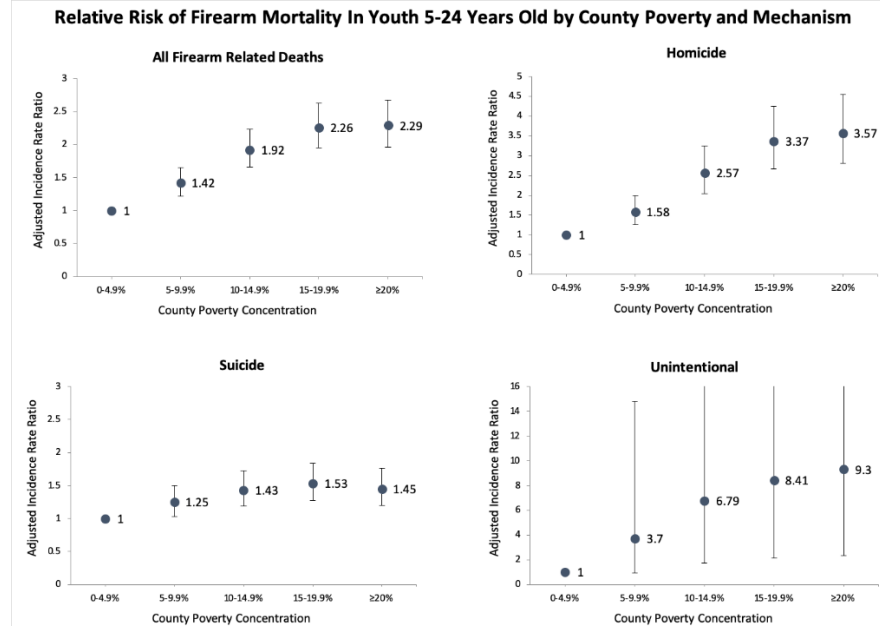


Figure 1

Compared with counties in the lowest poverty level, counties with the highest poverty level had an increased risk of firearm deaths from all intents (IRR 2.29, 95% CI 1.96, 2.67), homicide (IRR 3.57, 95% CI 2.81, 4.54), suicide (IRR 1.45, 95% CI 1.2, 1.76) and unintentional deaths (IRR 9.3, 95% CI 2.31, 37.3). This disparity was observed in each of the 10 years and was more pronounced in total-firearm and homicide mortality (Figure 2).

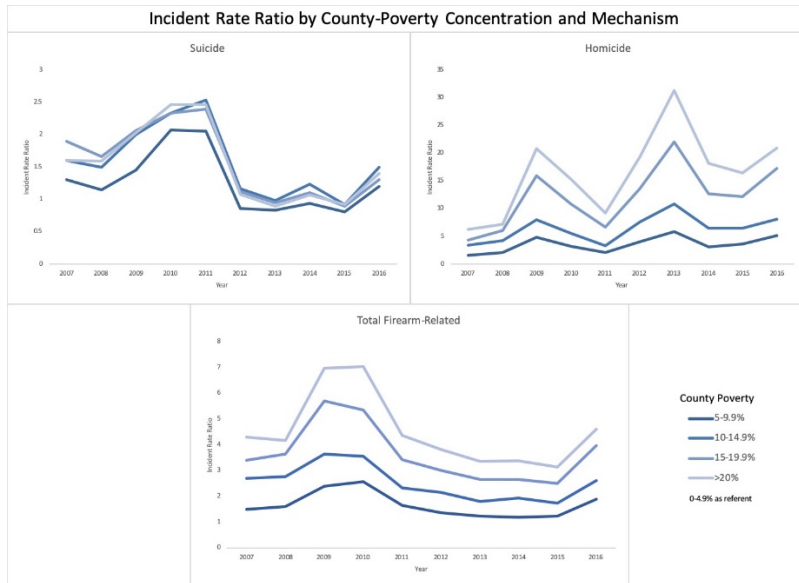


Figure 2

The PAF was 51% for total firearm deaths, 66% for homicide, 30% for suicide, and 86% for unintentional intent. This translates to 34,292 firearm deaths that would have been prevented if all counties had the lowest poverty level, including 27,932 homicides, 6,910 suicides, and 1,404 unintentional deaths. In total, there were 3,833,105 years of potential life lost.

Conclusions:

Marked disparities in firearm mortality rates among youth are associated with county poverty level. Over half of firearm deaths are potentially attributable to concentrated county poverty, suggesting efforts to curb youth firearm fatalities should focus on high poverty areas.

Objectives:

Attendees will Learn:

1. To identify disparities in firearm mortality rates are associated with poverty at the county level.
2. To recognize disparities in firearm mortality rates at the county level are manifested in total firearm-related deaths, homicides, suicides, and unintentional deaths.
3. To describe how higher county poverty levels attribute to more than half of firearm deaths.

Pediatric Gun Violence and Mental Health Disorders: A Nationwide Analysis of a Vicious Cycle

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Background:

Gun violence affects children by inflicting premature morbidity and death. Little is known on the effects of gun violence on pediatric mental health and substance use disorders. Thus, this study examines types of pediatric gun violence by intent with respect to pre-existing and new diagnoses of mental health disorders within one-year of injury.

Methods:

The Nationwide Readmissions Database 2010-2014 was queried for all pediatric firearm injuries. Outcomes of interest were incidence and predictors of mental health disorders. χ^2 analysis was utilized with significance defined as $p < 0.05$.

Results:

13,861 children were hospitalized after firearm injury. Most were teenage males (16 years [15-17], 86%) from an urban setting (98%), and were publicly insured (63%). Pre-existing mental health disorders comprised 14% and substance abuse comprised 12% of patients. Overall, 11% required readmission within one year and prevalence of mental illness nearly doubled (23% from 14%, $p < 0.001$). Particularly, rates of depression (8% vs 2%, $p < 0.001$) and post-traumatic stress disorder (7% vs 4%, $p < 0.001$) were significantly increased from the time of original trauma. There was no significant change in substance abuse rates seen within one-year readmission. Firearm injury intent groups comprised assault (60%), unintentional (29%), or self-inflicted (4%). Overall mortality was 6% while self-inflicted injuries were the most lethal (37%). Survivors of self-inflicted injuries had the highest rates of readmission, however children with unintentional injuries and assault had significantly higher rates of new mental health disorders (69% and 48% vs 8%, respectively, $p < 0.001$).

Conclusions:

There is a high coexistence of mental health conditions and substance abuse in children afflicted with firearm injuries. Mental health disorders not only precede trauma but are also increased in children sustaining unintentional or assault firearm injury. Thus, preventative efforts focused on mental health may help decrease the vicious cycle of gun violence.

Objectives:

Attendees will Learn:

1. To describe significant differences in mental health disorders and substance use and different types of firearm injury.
2. To recognize there is a much higher mortality rate in self-inflicted injuries.
3. To discuss how within one-year of their injury, mental health disorders are increased in child victims of gun violence, especially in those with unintentional and assault.

Attitudes and Perceived Barriers to Firearm Safety Counseling by Pediatricians: A Statewide Perspective

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Background:

Firearms are the second leading cause of injury-related death in American children. Safe storage of firearms is associated with a significantly decreased odds of firearm-related death, however more than half of US gun owners store at least one firearm unlocked or accessible to a minor. While guidance by primary care providers has been shown to improve storage practices, firearm safety counseling occurs infrequently in the primary care setting. The primary objective of this study was to describe physicians' perceived barriers to providing firearm safety education to families in the pediatric primary care setting. Secondary objectives included identifying physician attitudes and current practices around firearm counseling.

Methods:

This was a cross-sectional survey of pediatric primary care providers in Ohio. Participants were recruited from the Ohio AAP email list over a 3-month period. Only pediatric primary care providers in Ohio were included; subspecialists, residents and non-practicing physicians were excluded. Physicians completed an anonymous online survey detailing practice patterns around and barriers to providing firearm safety counseling. Three follow-up emails were sent to pediatricians that failed to initially respond. Response frequencies were calculated using Microsoft Excel.

Results:

Two hundred eighty-nine physicians completed the survey and 149 met inclusion criteria for analysis. One hundred seven (72%) respondents agreed that it is the responsibility of the physician to discuss safe storage. Counseling, however, occurred infrequently with 119 (80%) of physicians performing firearm safety education at fewer than half of well child visits. The most commonly cited barriers to providing counseling were lack of time during office visits, lack of physician education and few resources to provide to families. A majority, 82 physicians (55%), agreed they would counsel more if given additional training, with 110 (74%) conveying they would distribute gun safety devices to families if these were available in their practice.

Conclusions:

Ohio pediatricians agree that it is the responsibility of the primary care provider to discuss firearm safety. However, counseling occurs infrequently in the primary care setting due to a lack of time, physician education and available resources. Improving access to resources for primary care physicians will be critical in helping educate families in order to protect their children through improved storage practices.

Objectives:

Attendees will Learn:

1. To understand attitudes of primary care physicians about counseling families on firearm safety during well-child visits.
2. To describe current practices of pediatricians regarding counseling families about firearm safety.
3. To identify the main barriers to firearm safety counseling in the primary care setting and potential ways to overcome them.

Impact of Firearm Injury on Pediatric Hospital Utilization across the United States: Comparison of Firearm Vs Motor Vehicle Injuries in Children

Erica Sheline, MD; Harold Simon, MD, MBA; Claudia Morris, MD; Kiesha Fraser Doh, MD

Background:

Pediatric firearm injuries are a public health crisis warranting national attention. Motor vehicle injuries (MVI) involving children are seen in a similar light and therefore provide an effective comparison of resource utilization burden. This retrospective review of the Pediatric Health Information System (PHIS) database compares resource utilization of patients under 19 years of age presenting to a national network of pediatric emergency departments (EDs) for either motor vehicle or firearm injuries.

Methods:

PHIS, a national database of resource use for over 50 pediatric hospitals, was queried for patients with billable diagnosis codes for either firearm or MVI from January 1, 2013 to December 31, 2017. Information for patients from the 34 hospital systems which reported the relevant information to PHIS during our study period was analyzed using SAS with descriptive statistics calculated for all variables of interest.

Results:

There were 89,145 pediatric ED visits attributed to MVI and 3,247 for firearm injuries within the study time period. Of the patients who presented to the ED for firearm injuries, 48% were admitted to inpatient care versus 14% of patients presenting with MVI ($p < 0.001$). While the majority of patients were discharged home in both categories, 5.1% of patients with a firearm injury expired during the hospital stay compared to 0.3% of patients in motor vehicle accidents. Patients with firearm injuries were more likely to be admitted to an intensive care unit (ICU) and had significantly longer lengths of stay in both the hospital and ICU settings compared to their motor vehicle injury counterparts. Additionally, children presenting for firearm injuries had more imaging per patient, were more likely to both return to the ED and to be readmitted post-discharge at 3 days and 1 year ($p < 0.001$). Finally, the median billed charges were nearly 10-fold higher in the firearm compared to the motor vehicle injuries group.

Conclusions:

Markers of resource utilization were on average higher per patient for patients with firearm injuries compared to MVI. Given the high resource burden of pediatric firearm injuries compared to MVI, this study supports comparable national focus and funding on firearm-related injury prevention as given to MVI prevention.

Objectives:

Attendees will Learn:

1. To recognize why pediatric firearm injuries are a public health crisis warranting national attention.
2. To identify how markers of resource utilization in this study were on average higher per patient for those afflicted by firearm injuries compared to MVI.
3. To describe the high resource burden of pediatric firearm injuries seen in this study support comparable national focus and funding on firearm-related injury prevention as given to MVI prevention.

Rural Youth's Exposure to Firearm-Related Injury and Death and Their Attitudes Regarding Firearms

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Background:

In the shadow of recent firearm shootings in schools and the rise in teen suicides, youth have become leading voices raising concerns about the firearm-related death and injury epidemic. This study's objective was to investigate rural youth's personal experience with firearm-related death and injury, and their attitudes about firearms.

Methods:

Attendees of a Midwestern state's 2019 FFA Leadership Conference were surveyed at a children's hospital safety booth. Participants were queried about potentially negative personal experiences with firearms, and their personal beliefs about firearm-related issues. Descriptive and comparative analyses were performed utilizing the Statistical Package for the Social Sciences (SPSS).

Results:

The survey was completed by 1,382 FFA members who were 13-18 years old. Over one-third (36%) stated they personally knew someone who had been killed or injured by gunfire. Of these, over two-thirds (69%) knew of someone who had died or was injured by a firearm accidentally and 30% knew of someone who was killed or injured on purpose (e.g. suicide). Nearly 5% (n=64) reported having personally seen someone threatened by a firearm. These individuals saw the following people being threatened: a family member (32%), a friend (38%), themselves (11%) and others (26%). Nearly all (94%) agreed or strongly agreed that the right to use firearms for hunting and sports shooting should be kept legal. The vast majority (89%) agreed or strongly agreed that a firearm safety course should be required to get a hunting license. Males ($p<0.001$) had lower proportions that agreed that a firearm safety course should be required to get a hunting license. Three-fifths (60%) strongly agreed, and the vast majority (89%) agreed that there should be a background check required by law before someone can buy a firearm. Those that had hunted had lower percentages that agreed that a background check should be required by law ($p=0.034$). Over three-fifths (61%) agreed or strongly agreed that there should be laws requiring safe storage (locked and unloaded) of firearms in homes. Males ($p<0.001$), 16–18-year-olds ($p=0.006$), those living on farms or in the country ($p<0.0001$), those with firearms in their home ($p<0.0001$), those with unsafe firearm storage ($p<0.0001$) and those that had hunted ($p<0.001$) all had lower proportions that agreed that there should be laws requiring safe storage of firearms in homes.

Conclusions:

The majority of youth in this study agreed that hunting and sports shooting should be legal, but were also in favor of firearm safety measures such as required training, background checks, and safe firearm storage in homes. Over one-third of FFA members personally knew someone who was killed or injured by a firearm and about 5% had seen someone or been personally threatened with a firearm. Screening at health care visits or in schools may help identify youth with negative personal experiences from firearms who might benefit from mental health intervention.

Objectives:

Attendees will Learn:

To understand the degree of exposure rural youth have to firearm-related violence and its resultant injuries and deaths.

To be able to state some of the general attitudes youth have about firearm issues.

To be able to list at least three factors that might influence youth's attitudes regarding firearms.

Safe at Home? What do parental home safety practices look like during the COVID-19 pandemic

Kristin Roberts, MS, MPH; Rebecca McAdams, MPH; Lara McKenzie, PhD, MA, FAAHB

Background:

To slow the spread of COVID-19, many non-essential businesses, daycares and schools closed and areas imposed “stay-at-home” orders. Closures led to young children spending more time at home, traditionally, the place where more than 50% of unintentional pediatric injuries occur. The objective of this study was to describe parental home safety practices during the COVID-19 pandemic, including safety product acquisition and installation, safety actions (e.g., locking up medicines or turning pot handles to the back of the stove when cooking), and parental perception of home safety.

Methods:

A cross-sectional survey with a convenience sample of US participants, ages 18 years or older, was conducted from November 2020 to February 2021. Parents of children (<7 years) were recruited via social media (i.e. Facebook, Twitter) and invited to complete an online, anonymous survey about their home safety practices before and during the COVID-19 pandemic. Upon completion, parents had the opportunity to participate in a prize drawing to receive one of five \$100 gift cards. Descriptive statistics were conducted using R statistical software.

Results:

A total of 522 parents completed the survey. About half (48%) were 35-44 years of age and reported that since the beginning of the COVID-19 pandemic, the amount of time at home increased for them (93%) and their children (90%). From before to during the COVID-19 stay-at-home order, the percentage of parents who noticed additional areas in their home that may be unsafe for the child decreased from 53% to 39%, respectively. In fact, 43% of parents took additional steps to make their homes safer for their child(ren) during the stay-at-home order, including taking additional safety actions (42%) and purchasing and installing safety devices (39%). Stair gates or room gates (31%) and cabinet locks or latches (29%) were the products most frequently purchased or installed, while doorknob covers (19%) were the least common.

Conclusions:

Spending more time at home during the COVID-19 pandemic may have helped parents identify unsafe areas in their home and encouraged them to modify their behaviors, as well as, to purchase and install safety devices to help make their homes safer for their children.

Objectives:

Attendees will Learn:

1. To list parental home safety practices during the COVID-19 pandemic in the US.
2. To describe the safety devices acquired and installed and safety actions taken by parents during the COVID-19 pandemic in the US.
3. To discuss parental perception of home safety before and since the start of the COVID-19 pandemic.

Marijuana Ingestion in Young Children during the COVID-19 Pandemic in Illinois

Andrew Wilson, MD; Amy Hill, MS; Mike Wahl, MD; Gina Lowell, MD, MPH

Background:

Legalization of marijuana has been shown to increase accidental ingestions in young children. Illinois legalized marijuana use effective January 1, 2020. The COVID-19 pandemic created circumstances under which children were more likely to be cared for at home, thus increasing their potential exposure to legal marijuana products. We examined accidental marijuana ingestions during the height of the COVID-19 pandemic in children less than 5 years old in Illinois.

Methods:

Illinois Poison Center data enumerating calls for accidental ingestions of drug-related substances (e.g. medications, stimulants and street drugs) and non-drug related substances (e.g. household products, foreign bodies) was obtained from March 20-September 30 for the years of 2019 and 2020. Comparison of stimulants and street drugs were specifically examined for percentage increase in calls between 2019 and 2020 by drug category. Marijuana was further analyzed by type of preparation (edible, plant, CBD, other/unknown). Additionally, we reviewed the Illinois Poison Center's (IPC) publicly shared data for marijuana edible ingestions by month from January 2019-December 2020. A case series of unintentional marijuana ingestions during 2020 was analyzed from a single tertiary care children's hospital to elucidate any pattern of ingestion.

Results:

There were 48 ingestions of any marijuana product during March-September of 2019, and 134 ingestions of any marijuana product during March-September 2020. This reflects a 179% increase in marijuana ingestions. Ingestions of marijuana preparations increased as follows: edibles (22 in 2019, 96 in 2020, 336% increase); plant (8 in 2019, 20 in 2020, 150% increase); CBD (8 in 2019, 12 in 2020, 50% increase); other/unknown (4 in 2019, 6 in 2020, 50% increase). Other stimulant and street drug ingestions changed as follows: amphetamine (57 in 2019, 68 in 2020, 19% increase), caffeine (31 in 2019, 29 in 2020, 6% decrease) and methylphenidate (16 in 2019, 27 in 2020, 69% increase). IPC data demonstrated the greatest monthly increase in edible ingestions occurring during the months of April-July 2020. Eight marijuana ingestions occurred at a single institution during 2020. Four of the eight ingestions were due to smoked joints; three were edibles (specifically gummy); 1 was not disclosed.

Conclusions:

Illinois experienced a greater increase in calls related to marijuana ingestions in children under 5 than other states following legalization. We speculate this increase above expected calls for ingestion may have been due to the COVID-19 pandemic's shelter-in-place orders, increasing young children's likelihood of exposure to marijuana products in the home, as reflected in the IPC call data for marijuana edible ingestions by month. Though plant ingestions increased to a lesser extent, they resulted in PICU admissions. Public messaging should include strategies to prevent both plant and edible ingestions in young children.

Objectives:

Attendees will Learn:

1. To describe how legalization of marijuana continues to drive increases of accidental ingestion of all types of marijuana products in young children.
2. To recognize in Illinois, the greatest increase in accidental ingestions appear to have occurred during the 2020 COVID-19 pandemic's shelter-in-place orders.

3. To evaluate how poison center data coupled with institutional data helps illustrate patterns of ingestions, which can develop prevention strategies.

Injuries- A pandemic within the Covid 19 pandemic

Isabella Masler, MD; Shea Duerring, MD; Kathy Monroe, MD

Background:

The covid 19 pandemic resulted in drastic decreases in volume for most pediatric emergency departments. Injuries have persisted and there has been concern that injuries may have increased during the pandemic. This study evaluates the impact of the covid 19 pandemic on trauma alert numbers at the emergency department of a freestanding Children's Hospital.

Methods:

This retrospective time series review evaluated severe injuries meeting trauma team activation criteria. Our institution is the only level 1 trauma center for children in the state. Trauma alerts are defined by strict criteria and are divided into level 1 or level 2 traumas. Additional injuries not meeting trauma criteria are seen within the emergency department and are not included in these study numbers. We reviewed hospital emergency department data and hospital trauma database data for the years 2017 through 2020. Total numbers of patients per year, numbers of trauma alerts/year and % of total that were trauma activations were calculated. Data were managed using Excel.

Results:

This institution saw a 34 % decrease in overall volume from a high of 74,513 (in 2019) to 48,924 (2020) In 2020, overall volume decreased by 25,589 where the increase between 2017 through 2019 had been steadily increasing with an additional 1100 patients /year in the prior year. The number of trauma alerts increased from 351 in 2017 to a high of 571 in 2020 and those numbers remained stable (568 to 571) in 2020 compared to 2019. The percent of total volume accounted for by trauma alerts went from 0.65 to 1.2% in the 2019-2020 year (continuing the increase from 0.48% in 2017 to 0.56 % in 2018). Historically motor vehicle crashes account for the majority of the trauma alerts and while that is still true, the number of trauma alerts accounted for by firearm related injuries increased from 36/year in 2018 to 44 in 2019 to a high of 66 (12% of total trauma alerts) in 2020.

Conclusions:

While total volumes of patients being seen decreased by 34%, the total number of trauma activations remained stable resulting in an increased percentage of trauma alert patients. This indicates that severe injuries requiring trauma alert activation did not diminish during the pandemic. This has implications for prevention as well as implications for ED staffing. Changing trends in types of severe injuries are noted.

Objectives:

Attendees will Learn:

1. To list the changing injury patterns during the covid 19 pandemic.
2. To describe the effects of a pandemic on injury acuity.
3. To describe implications for staffing during a pandemic.

A new paradigm for injury prevention programs in the post-pandemic world

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Background:

The COVID-19 pandemic has presented unique challenges for effectively delivering injury prevention programs. During the pandemic, community events and face-to-face interactions were no longer permitted. Injury prevention (IP) programs at a Level 1 Pediatric Trauma Center adopted new methods to maintain continuity and deliver interventions to at-risk, vulnerable communities and meet grant obligations.

Methods:

Three grant-funded programs are discussed here. Recruitment efforts for all programs moved away from face-to-face meetings to digital flyers, short promotional videos, and emails. For the Be in the Zone (BITZ) teen driver safety program and Ride on TN-ATV safety program, the hospital-based phase that involved face-to-face sessions with surgeons, physical therapy staff, ED personnel, and speakers with first-hand experience of consequences of distracted driving, were replaced with an online educational curriculum.

This consisted of short video modules that included embedded assessment, lesson plans, and guided questions to assist teachers. These videos offered teachers synchronous and asynchronous options to deliver content. The school-based components of these programs were also modified in several ways. Emphasis was placed on peer-led activities that relied on social media and virtual platforms.

For the Kohl's Stay Seat Smart program, Zoom sessions with interactive video modules were used to educate young mothers and caregivers in underserved communities. Recruitment was coordinated through agencies like WIC, refugee centers, state health department, and public schools. A digital car seat toolbox for caregivers was created and distributed. The toolbox included videos created in-house, visual handouts, and resources from sources such as Safe Kids and NHTSA.

Results:

Between June 2020 – April 2021, participation in the virtual BITZ hospital-based phase grew by 106% (48 to 99) compared to previous year. Participation in the virtual hospital-based phase for the ATV Safety program grew by 183% (31 to 88) compared to previous year. The virtual platform allowed for synchronous and asynchronous options to deliver content that was mobile-friendly. This allowed for broader reach of program compared to face-to-face classes. Participation in Kohl's Stay Seat Smart virtual classes grew by 98% (54 classes to 107 classes). These classes were synchronous and offered in the evening hours to facilitate more participation from working families.

Conclusions:

Post-pandemic phase will incorporate a blended approach that will use virtual interventions to extend reach to less accessible schools and community partners. This pivot to a blended approach will allow the program to scale up. This will also free up hospital resources. Virtual interventions are being modified with shorter chunks that are more interactive based on student feedback. Emerging insights include need to accommodate constraints of bandwidth and availability of high-speed internet to make effective online delivery of these programs.

Objectives:

Attendees will Learn:

1. To recognize challenges faced by injury prevention programs during COVID-19.

2. To describe innovative practices adopted to modify existing injury prevention programs during the pandemic.
3. To discuss lessons learned for injury prevention programs in the post-pandemic world.

Firearm Presence and Storage in Rural Youth Homes

Nicholas Stange, BS; Cole Wymore, BS; Kristel Wetjen, RN; Pam Hoogerwerf, BS; Kelly Wood, MD; Joel Shilyansky, MD; Lauren Mulford, BA; Charles Jennissen, MD

Background:

Firearm suicides in children/teens increased 65% in the past decade, and over 80% involve a gun belonging to a family member. Safe firearm storage can be a major factor in preventing these tragedies. This study's objective was to determine firearm exposure and storage practices in the homes of rural youth.

Methods:

Attendees of the 2019 State FFA Leadership Conference in a Midwestern state were surveyed at a children's hospital safety booth. Data was collected regarding the presence of firearms in the home and their storage. Demographic data was also obtained. Descriptive and comparative analyses were performed utilizing the Statistical Package for the Social Sciences (SPSS).

Results:

The survey was completed by 1,382 FFA members 13-18 years old. Just over half (53%) lived on a farm, nearly two-fifths (18%) lived in the country but not on farm, and 29% lived in town. Over four-fifths (84%) of FFA members were aware of having at least one rifle/shotgun in their home, while nearly three-fifths (58%) had at least one handgun. Over one-half (56%) had both rifles/shotguns and handguns at their homes. The proportion of homes with firearms varied significantly by where FFA members lived ($p < 0.001$): farm (91%) > country/not farm (86%) > town (70%) for rifles/shotguns; and farm (63%) > country/not farm (57%) > town (50%) for handguns. Caucasians had higher proportions with rifles/shotguns in the home (95%) than those of other races (66%, $p < 0.001$). Of those with rifles/shotguns in their home, over half (51%) stated they were stored unlocked, 29% stated they were stored loaded, and 17% stated they were stored both unlocked and loaded at least some of the time. For those who reported there were rifles/shotguns unlocked at least part of the time in their home (51%), almost one-half (46%) also had ammunition that was stored unlocked. Higher proportions living on a farm > country/not farm > town reported having rifles/shotguns not properly stored ($p = 0.019$). Of those with handguns in their home, over two-fifths (43%) stated they were stored unlocked, two-fifths (40%) said they were stored loaded, and about a quarter (24%) reported they were stored both unlocked and loaded at least some of the time. For those who reported there were handguns unlocked at least part of the time in their home (43%), 38% also had ammunition that was stored unlocked. Of those who were aware of how both rifles/shotguns and handguns were stored in the home, 82% reported that they had at least one firearm stored either unlocked or loaded at least some of the time.

Conclusions:

The vast majority of FFA members in a Midwestern state have firearms in their home and a large proportion of them are not stored safely. This puts these adolescents at increased risk for firearm-related suicide. Widespread efforts are needed to educate rural families regarding the importance of proper storage of firearms and ammunition.

Objectives:

Attendees will Learn:

1. To understand the degree of firearm/rifle and handgun presence in the homes of rural youth.
2. To be able to state the storage patterns of firearms/rifles and handguns in rural homes where youth live.

3. To be able to list at least two factors that are associated with an increase in the proportion of homes of rural youth with firearms/rifles and handguns being present, as well as improper storage.

Trauma-Informed Acute Care of Patients with Violence-Related Injury

Bonnie Hawkins, MD; Edouard Coupet, Jr, MD, MS; Sidney Saint-Hilaire, BS; James Dodington, MD

Background:

Patients with violence-related injuries presenting to the Emergency Department (ED) have an elevated risk of repeat injury and high rates of mental health and social needs after being discharged from acute care settings. To address this, providers must engage and refer patients to intervention services such as hospital-based violence intervention programs (HVIPs). This pilot study aimed to demonstrate feasibility of community-engaged trauma-informed-care training for emergency and surgical residents focused on this patient population. It also aimed to better understand current trauma-informed care practices of residents to inform research and medical education efforts.

Methods:

We developed a community-engaged trauma-informed care training with a local community violence prevention non-profit and an HVIP. We piloted five sessions with emergency medicine and surgical residents with at least 1 year of residency experience. Each participant attended one ~2-hour session in a group of 2-4 participants. There were 13 study participants. We conducted simulation-primed small group qualitative interviews during each session. Data was analyzed using grounded theory principles. We also conducted pre- and post-Likert scale surveys modified from a published scale querying comfort with trauma-informed care, and included an open-ended post-survey question requesting comments. Answers were converted to numerical values of 1-5. Two sample, two-tailed t-tests were calculated for each question comparing the pre-survey and post-survey responses with n=13 participants in each group.

Results:

There were post-training increases in self-rated trauma-informed care comfort, with 3 out of 4 questions reaching statistical significance. Residents suggested training be included in the residency curriculum. Qualitative themes were: 1) Residents perceive their role as managing medical/surgical concerns and seek others to build trust and manage psychosocial and legal concerns, 2) Residents had a high level of knowledge of ED stressors and de-escalation strategies, 3) Residents perceived that patient distrust can negatively impact their ability to provide care, and 4) Residents perceive that law enforcement can negatively impact care and are sometimes uncertain about how to interact with law enforcement.

Conclusions:

Community-engaged trauma-informed care training for emergency medicine and surgical residents is feasible. Medical education should focus on medico-legal uncertainty, structural and interpersonal distrust of medical providers and the medical system and addressing post-discharge mental health and social needs.

Objectives:

Attendees will Learn:

1. To describe how community-engaged trauma-informed care training is feasible.
2. To describe how providers perceive uncertainty regarding medico-legal issues that can negatively impact their ability to provide care.
3. To discuss perspectives on how providers perceive distrust of healthcare institutions.

Amplifying the urban youth voice: An opportunity for gun violence prevention

Nina Agrawal, MD

Background:

Gun violence is a public health crisis. Most research on gun violence prevention focuses on injury and death. A poorly recognized and more prevalent firearm-related morbidity is childhood exposure to violence involving a gun, which includes hearing gun shots and knowing a friend/family member who was shot. Childhood exposure to violence is associated with lifelong adverse health effects. Parkland youth have been effective in informing policy makers about the mental health effects of exposure to a school mass shooting. While exposure to gun violence is more common in urban communities, there is limited data from urban youth on what pediatricians can do to improve prevention and intervention in this vulnerable population.

Methods:

This qualitative study used 1 focus group conducted on Jan 10, 2019. Eleven participants were recruited from a hospital-based gun violence prevention program for non-gang involved urban youth. Participants were: age range 6-18 yo (mean 12yo), gender: 7 male/4 female, ethnicity and race: Black/Hispanic, English speaking. Child and parental consent were obtained as per IRB protocol. Focus group questions were developed for study purposes. Themes were analyzed from focus group responses.

Results:

Urban youth do not feel comfortable communicating with their health provider about gun violence. Barriers include lack of relationship with provider, trust with provider, provider understanding of urban youth problems, and provider training on communicating with youth on gun violence. Youth reported knowing family/friends who have been shot, experiencing depressive symptoms in response, wanting school personnel to recognize their symptoms and refer to school counselor for further exploration and support. Focus group responses included: "Everyone knows someone who died and they lash out", "Anybody could die in 5 minutes", (You) "talk to your doctor about a cold", "The doctor should make me feel like I want to talk about it", (The teacher should notice) "I can see in his eyes that something is wrong...their body...head down" (and say) "What's wrong?", "What's going on with you?"

Conclusions:

Health providers caring for urban youth should (1) consider exposure to violence involving a gun as a risk factor for mental, emotional, and behavioral health problems, and (2) learn effective prevention strategies that address gun violence exposure. Classification of exposure to violence involving a gun as an adverse childhood experience is recommended to identify extent of this public health issue and better inform early prevention efforts.

Objectives:

Attendees will Learn:

1. To recognize exposure to gun violence as a health issue in non-gang involved urban youth.
2. To identify barriers to gun violence prevention in urban health care settings, from the youth perspective.
3. To apply the youth focus group method in developing effective community based prevention strategies.

The Practice of Lethal Means Restriction Counseling to Reduce Suicide Risk: a Systematic Review of the Literature

Amy Hunter, PhD; Susie Divietro, PhD; Kristin Burnham, BS; Megan Boyer, BS; Danielle Chenard, MPH(c); Steven Rogers, MD

Background:

Suicide is the second leading cause of death in individuals aged 10 – 34 years in the United States. Lethal means restriction (LMR) counseling, which encourages limiting access and reducing lethality of particular methods of suicide, has been identified as a viable prevention strategy. For this approach to be successful, adequate education about risks and means must be communicated to families and individuals at risk for suicide. This systematic review aims to identify methods of LMR most commonly communicated by healthcare providers, and barriers to the delivery of such counseling.

Methods:

The protocol for this systematic review is registered with PROSPERO (CRD42018076734). Included studies were identified through searching four databases (PubMed, Scopus, Psych-Info, and EBSCO). Studies were selected and coded independently by two researchers. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines were used to assess the quality of reporting for observational studies.

Results:

A total of 1,254 studies were screened; 9 met the inclusion criteria. Included studies were published between 1998-2018. Study participants were majority female, and safe firearm storage was the most common form of lethal means restriction education provided. Just two studies included education on multiple forms of lethal means (e.g. alcohol, education, and firearm storage). Barriers limiting healthcare providers' delivery of LMR counseling included lack of specific skills to address LMR and skepticism regarding the effectiveness of LMR counseling.

Conclusions:

There is limited published evidence that identifies the most effective methods and target populations for LMR education. Given the growing literature providing evidence of gender differences in suicide modality (e.g., guns, medications, suffocation), lethal means restriction education should be multifaceted, to address common means of suicide in both males and females. A majority of suicide attempts and many completed suicides amongst youth do not involve firearms, regardless of gender. This highlights the need to include discussion of multiple forms of lethal means during counseling to reduce risk of suicide. Further prospective studies should identify the most effective methods of providing lethal means counseling.

Objectives:

Attendees will Learn:

1. To discuss a systematic review of the literature on lethal means restriction counselling (LMR).
2. To identify methods of LMR counseling most commonly communicated by healthcare providers.
3. To understand the barriers to the delivery of information of LMR.

What Factors Impact Pedestrian and Cyclist Fatalities? A State Level Analysis

Zoabe Hafeez, MD; Malvi Mehta, BS

Background:

Pedestrian and cyclist injuries have increased since 2010 after a long downward trend. Trucks and SUVs, collectively called light trucks, have also increased in sales as well as size. This has led to speculation that they may be contributing to the increase in fatalities of cyclists and pedestrians. Additionally, pedestrian and cyclist commuters vary by state and it has been speculated that an increase in pedestrian and cyclist commuters may also correlate with fatalities. Studying vulnerable road users can aid in protecting the pediatric population who are often obligated to be vulnerable road users.

Methods:

State level pedestrian and cyclist fatality data was obtained from the National Highway Transportation Safety Administration for 2018. Light truck registration for each state was obtained from the United States Department of Transportation for 2018. Commuters who walk or bike to work was obtained from the Centers for Disease Control and Prevention for 2014, the latest year data was available. We performed multiple linear regression, accounting for total lane miles as a proportion of the population, also obtained from the Office of Highway Policy Information for 2018. The outcome variable was logarithmically transformed to ensure normality of residual data.

Results:

We included all 50 states in our data. Our outcome variable studied was pedestrian and cyclist fatalities per 100,000 people in 2018, with a mean of 1.95 fatalities (SD 0.94) and range from 0.67 to 4.49 deaths. This accounted for all 7123 pedestrian and cyclist fatalities that occurred in the 50 states in 2018. The proportion of light truck drivers by state varied from 48.5% to 72.2% of total drivers with a mean of 58% (SD 5%). The percent of commuters who walk or bike to work varied from 1.4% to 8.9% with a mean of 3.5% (SD 1.6%). Multiple regression analysis was performed with the three independent variables. Results showed that the model was significant ($p=0.03$); however, the association between light trucks and pedestrian/cyclist fatalities appeared insignificant ($p=0.84$). The only significant independent variable in the model was commuters who walk or bike with a negative correlation ($p=0.03$).

Conclusions:

There is no association between proportion of light truck registration by state and pedestrian and cyclist fatalities, despite the hypothesis that they are more likely than small automobiles to kill vulnerable road users. However, it appears that more pedestrian and cyclist road users are associated with a decrease in pedestrian and cyclist fatalities, implying a protective factor that may be understated by the model. This understanding may aid in increasing the safety of the pediatric population, often the most vulnerable of users, and their ability to traverse their surroundings.

Objectives:

Attendees will Learn:

1. To recognize pedestrian and cyclists' fatalities do not appear associated with an increase in light trucks on the road.
2. To understand an increase in pedestrian and cyclist commuters are associated with a decrease in fatalities.
3. To discuss variables that may or may not contribute to pedestrian and cyclist fatalities.

The Highs and Lows of the Process Evaluation of a Multi-Tiered Teen Driver Safety Program

Sarah Beth Abbott, BS; Jessica Yell, BSN, RN, CEN; Sandra McKay, MD

Background:

Motor vehicle collisions are the leading cause of fatalities among adolescents in the United States. Our region, which encompasses several large metropolitan areas, is particularly concerning for motor vehicle collision fatalities. In response to the lack of positive programs that empowers teens and includes parents, our Level I trauma center garnered funding and developed a multi-tiered program. The multi-tiered teen driver safety program is committed to reducing injuries from motor vehicle collisions by increasing awareness and education of protective measures and risk factors affecting motor vehicle safety. An independent evaluator was hired to facilitate a process evaluation to identify mechanisms of the program's implementation that contributed to the program's success.

Methods:

An injury prevention coordinator recruited interested public and private high schools in the large metropolitan area during 1/2019-8/2019. Evaluation design included mixed-methods approach with data collected from both student and adult participants at two specific interventions. Interventions include Awareness Event and Hospital-Based Event. Evaluation tools created to collect both quantitative and qualitative data. Quantitative data was collected by way of a brief survey administered before and after targeted awareness and hospital-based events. Qualitative data was collected by way of interview based on the survey and used at both the individual and group level. A descriptive analysis performed on all data. In addition, statistical reliability checks performed for each administration of survey tools and, where possible, paired-sampled t-test conducted.

Results:

Process evaluation data collected from 520 participants. Two awareness events yielded 264 teens. Additionally data was collected at five Hospital-based events from 256 participants (53% students, 37% parents, 3% teachers and 7% were both teachers and parents). Overall, the view of the effectiveness of all events experienced by participants revealed statistically significant increases from before they experienced the events they were attending to after their experiencing these events. Regarding the Hospital-based events, participants expressed what they liked the most and what they thought could be improved. Participants consistently reported they liked the location of the hospital where the event was held as well as the set-up of the room; however, they consistently stated that the parking situation could be improved. Participants consistently expressed that the overall experience for both interventions was the best way to help people not drive distracted or impaired and it was the overall experience that participants also felt had the greatest impact on them compared to individual aspects of the interventions such as general education or messaging in schools.

Conclusions:

The results from the process evaluation will be used to foster essential changes to the teen driver program and will guide an impact evaluation.

Objectives:

Attendees will Learn:

1. To discuss the interventions in a multi-tiered teen driver safety program.

2. To understand the importance of process evaluation in a teen driver safety program.
3. To recognize the significance of collaboration and community resources in relation to motor vehicle safety.

No Child Unrestrained: Reaching the Hard to Reach with Booster Seats

Phyllis Agran, MD, MPH; Erin Malone, MPH; Sandra Murray, MD; Alfonso Valdez, PhD; Susana Sosa, MS

Background:

Strides have been achieved in child occupant safety with education, free/low cost car seats, and mandatory restraint use laws. A national sample revealed that 38.6% of 4-7 years-old were unrestrained or in a seat belt. In our County (2015-2017) no child was fatally injured; 255 sustained injuries. Traditional criteria for appropriate usage include selection, direction, location, installation and harnessing, and proper fit of vehicle safety belt. Our State Vehicle Code 27360 states all children under 8 years must be properly buckled into a child restraint and 27360.5 permits 8 years and older to use the vehicle safety belt if it fits properly. Our local collaborative family health expos include child passenger safety education along with individual fitting and distribution of booster seats.

Goals/Objectives. Determine 1) current restraint use; 2) proportion properly restrained; 3) reasons for needing a booster seat; 4) knowledge of transitioning to booster seat and our state law.

Methods:

Data was collected from parent/child at the Booster Seat Station, by our certified Child Passenger Safety Technician Instructor (CPSTI) at two family health resource center expos. Two-thirds of participating families reported annual income below the Federal Poverty Line. Over 85% were Latino/Hispanic. Volunteer student health professionals weigh/measure child, provide educational materials, and assist in completing forms. The CPSTI interviews child/parent regarding current restraint use using our tool which does not contain personal health information. Each child sits in the CPS Simulator Training Seat demonstrating how s(he) currently travels. The CPSTI demonstrates whether this is appropriate or improper. If improper, the child sits in the booster seat, demonstrating proper fit, and performs a return demonstration.

Results:

Sixty-five children were evaluated/fitted for a booster seat. The age/weight distribution was as follows: 6% - 4 years (40-65#); 83% - 5-7 years (40-88#); 11% - 8-9 years (61-90#). 100% were riding improperly and 40% of parents did not know when to transition to a booster seat. Of the 65 children, 40% were in a child restraint that they had outgrown; 32% were only using the booster seat in one parent's vehicle; 20% were riding in an improperly fitted seat belt; and, 8% were using an old or crash-involved seat.

Conclusions:

No-cost booster seat education and fitting/distribution is a known beneficial intervention. Surprisingly, no child was properly restrained using our expanded definition of selection, direction, location, installation, harnessing, and proper restraint use all the time in all vehicles in which the child travels. Innovative venues and methods for booster seat education/distribution contributes to "Vision Zero" goal of zero traffic fatalities/severe injuries. In light of our COVID-19 pandemic, innovative remote/virtual methods of education/distribution with pickup of booster seats are indicated.

Objectives:

1. Adapt criteria of proper child restraint use to include "at all times in all vehicles in which the child travels" to promote the norm of "no child unrestrained."
2. Inform parents of best practices for child occupant protection that may differ from your current state law.

3. Develop alternative methods, including virtual platforms for education and distribution of booster seats to contribute to "Vision Zero" for child motor vehicle occupants.

Car Seat Challenge: Collaboration to Confidence

Lorrie Lynn, MA

Background:

Properly fitted child passenger safety restraints are an evidenced based measure to reduce morbidity and mortality in motor vehicle crashes. Children with special healthcare needs, medically fragile or of low birth weight are particularly vulnerable to injury. Thus, the need to work with clinical providers to ensure they are properly evaluated for transportation home following a surgery or prolonged stay in the NICU. The Car Seat challenges (or Tolerance test) are employed in all hospitals throughout the United States to ensure that children of low birth weight or medical conditions can maintain their airway for the duration of travel home. Many hospitals do not have the resources to staff a full time Child Passenger Safety Technician (CPST) on medical units. Our program was initiated by a nurse champion who had located from a children's hospital with a robust CPS program and was eager to begin training for nurses.

Methods:

A Task Force co-chaired with a nurse champion and lead CPST was formed to develop a Quality Improvement Project. The aim of the project was to increase the percent of patients safely fit in a car seat prior to discharge. The target was to increase from 0% to 3%. Tactics to achieve this aim included: observation and evaluation of current processes, patient demographics, review of the existing Care Seat Tolerance Test Policies and Procedures, the development of a nursing survey to identify baseline knowledge and confidence, development of a protocol for car seat evaluation, development of a training course for nursing based on the pre survey, policies and protocol and a post training survey.

Results:

The initial survey of Cardiac ICU RNs measured confidence around the task of the car seat challenge. Out of 30 respondents to the pre-survey, 47% stated they were "Confident" or "Very confident" about properly fitting a child for the car seat challenge. The physician interpreted these results as a need to educate nurses on the car seat challenge. Post training evaluation showed that 86% of participants were "Very Confident" or "Extremely Confident" with performing the car seat challenge. This is an 83% increase in confidence including the development of a toolkit for continuous train-the-trainer experiences in the unit. Post training survey data was analyzed, ongoing procedures observed and reviewed and a system for ongoing quality improvement was implemented. The post survey revealed that of nurses were confident in communicating with parents to seek out local car seat inspection station to ensure the child passenger safety seat was installed correctly.

Conclusions:

The training empowered nurses with knowledge to correctly fit infants for the car seat challenge and to be confident in talking through fit with parents. The Toolkit provides access for reference and refreshers which eliminated calls for CPST support on the unit. The training is flexible and has been done with another NICU within a local hospital. The key to building this type of training is the collaboration between a nurse advocate and the CPST.

Objectives:

Attendees will Learn:

1. To appraise survey and evaluation data to assess effectiveness of training and for continual process improvement.
2. To determine ways to collaborate with nurse advocates to guide training development.

3. To identify key CPS education and training for bedside nurses that is based on components using adult learning theory.

A 5-Year Comparison of Pediatric Motor Vehicle and Firearm Injury Trends In The US

Kiesha Fraser Doh, MD; Erica Sheline, MD; Claudia Morris, MD; Martha Wetzel, PhD; Harold Simon, MD, MBA

Background:

Recent evidence from the Centers for Disease Control demonstrate that firearm injuries (FI) have reached a record high. This is juxtaposed against motor vehicle injuries (MVI) which have decreased. Comparing the trends of the leading causes of pediatric death (FI and MVI) can inform the injury prevention communities.

Methods:

This studied compare national trends in pediatric MVI vs. FI for patients presenting to a collaborative network of pediatric hospitals over a 5-year period. This was a retrospective review of patients <19 years presenting nationally to 34-member hospitals who contribute to the Pediatric Health Information System (PHIS) database from Jan. 1, 2013, to Dec. 31, 2017. PHIS was queried for patients who had billable diagnosis codes for either FI or MVI and analyzed using SAS and modeled separately. Trends were calculated using linear regression models with logged case counts as the dependent variable. Regional trends were assessed using the US Census Bureau regions with data normalized by overall inpatient admissions for each PHIS hospital center per region.

Results:

There were 89,145 visits for MVI and 3,247 for FI over the 5-year period. A 5-year time trend was observed for FI inpatient admissions, with the number of FI-related admissions increasing by 15% per year on average ($p=0.008$). However, no clear time trend was present for MVI-related inpatient admissions. ICU admissions noted a 13% ($p=0.04$) increase for FI versus -5.3% ($p=0.22$) change for MVI. Over the study period, FI deaths increased by 21% ($p=0.07$) versus 1% ($p=0.88$) increase for MVI. Regional trends showed FI increased nationwide over the study period and are consistently higher in the South and Midwest.

Conclusions:

Trends show an increasing number of injuries attributed to firearm injury presenting to a large pediatric database of hospitals while similar increases in motor vehicle injury are not seen. Regional and national increases in firearm injury related deaths are also noted. Motor vehicles are highly regulated in design, safety features and use. In contrast, firearms are much less regulated, less studied and safety designs are less mandated. These and other differences need further investigation in order to optimally study and effectively intervene on these alarming trends in pediatric related firearms deaths.

Objectives:

Attendees will Learn:

1. To understand firearm injury admissions are increasing in children over a 5-year period of children's hospital admissions.
2. To discuss how firearm injuries ICU admission are more prevalent than motor vehicle injury.
3. To describe how firearm fatalities had a substantial increase over a 5-year period compared to motor vehicle injuries.

Characteristics Associated with Pediatric Intentional and Unintentional Firearm Injuries

Martine Madill, BA; Stephen Strotmeyer, PhD; Barbara Gaines, MD

Background:

Firearm injuries remain a public health crisis in pediatric and adult populations. Approximately 19 children die or are treated for firearm-related injuries per day in the United States [1]. Prior studies on the epidemiology of all-cause morbidity and mortality have demonstrated significant sociodemographic differences between individuals injured intentionally versus non-intentionally [2]. However, it remains to be seen whether differences exist within firearm injuries specifically, as well as which sociodemographic characteristics are most predictive of unintentional or intentional firearm injuries.

Methods:

Patients 0-18 years-old treated for a firearm injury at a freestanding, urban children's hospital between 2008 - 2018 were included (160 patients). Injuries from air-powered, gas-powered, BB and pellet guns, and non-penetrating injuries associated with firearms (e.g. "pistol whipping") were excluded.

Firearm-related injuries were identified using the hospital's trauma registry. To capture all relevant injuries, the registry was queried by free-text cause of injury as well as by external cause of injury codes. Injuries were dichotomized into intentional and unintentional groups. Sociodemographic variables were collected from medical and social work notes, and from internet and social media.

Characteristics between intentional and unintentional injuries were compared using Chi-square, Fisher's Exact, and Mann-Whitney U-tests. Leveraging information theory [3], attributes of injuries and injured individuals were compared to determine which characteristics were most discriminative between groups.

Results:

One hundred sixty injuries were identified (57 unintentional, 4 self-inflicted, 99 assaultive). Self-inflicted and assaultive injuries were grouped as "intentional." Children injured intentionally were more likely to be older (mean age: 13), Black, publicly-insured, live in a single-parent household, have a parent incarcerated, be experiencing problems at school, be involved in a gang, and have a prior psychiatric diagnosis ($p < 0.05$). Conversely, those injured unintentionally were more likely to be younger (mean age: 10), White, privately insured, and living in a dual-parent household ($p < 0.05$). They were less likely to have a parent incarcerated, have problems at school, be involved in a gang, or have a prior psychiatric diagnosis ($p < 0.05$).

Comparisons between the two groups on sex, mortality, whether or not the child was removed from their home, previous involvement with Child Protective Services (CPS), number of children living in the home, parent employment status, alcohol involvement, positive CRAAFT score, and prior involvement in firearm trauma were not statistically significant.

Age, race, and insurance status were the most discriminative between unintentional and intentional firearm injuries. Sex, prior involvement in firearm trauma, and whether or not the child was removed from the home by CPS were the least discriminative.

Conclusions:

Firearm injuries, particularly in children, should be preventable. Understanding who is affected, where, and how, is critical. Our study demonstrates sociodemographic differences exist between unintentional and intentional firearm injuries in children. However, these two groups shared similar characteristics across

important variables, including sex and prior involvement in firearm trauma. This suggests that reducing access to firearms for all children could decrease rates of both unintentional and intentional injuries.

Objectives:

Attendees will Learn:

1. To identify sociodemographic differences between unintentional and intentional firearm injuries in children.
2. To recognize children injured unintentionally are more likely to be older, Black, and publicly-insured.
3. To determine children injured by firearms are similar across important characteristics, including sex and prior involvement in firearm trauma.

Firearm Exposure and Safety Training of Rural Youth

Charles Jennissen, MD; BS; Cole Wymore; BS; Kristel Wetjen, RN; Pam Hoogerwerf, BS; Kelly Wood, MD; Lauren Mulford, BA; Joel Shilyansky, MD

Background:

Few studies have examined rural children's exposure to firearms despite their frequent presence in homes. The objective of this study was to investigate rural youth's use of firearms and whether they had received firearm training.

Methods:

2019 State FFA Leadership Conference attendees in a Midwestern state were surveyed at a children's hospital safety booth. Participants were asked about their use of rifles/shotguns and handguns including when they first used a firearm. They were also asked whether they had taken a firearm safety course and how old they were when trained. Descriptive and comparative analyses were performed utilizing the Statistical Package for the Social Sciences (SPSS).

Results:

The survey was completed by 1,382 FFA members aged 13-18 years old. The vast majority (85%) had fired a rifle/shotgun, with nearly three-fifths (58%) reportedly doing so more than 20 times. Of those that had fired a rifle/shotgun, nearly one-third (32%) had done so before they were 9 years old, and nearly four-fifths (79%) before 13 years. Most members had also fired a handgun (62%), with about 30% having fired a handgun more than 20 times. Of those that had fired a handgun, about one-third (34%) had done so before 11 years of age and four-fifths (80%) had done so before age 15 years. The mean age when members had first fired a rifle/shotgun was 10.1 (SD 2.9) years, and first fired a handgun was 11.9 (SD 2.8) years. Males as compared to females, those 16-18 years as compared to those 13-15 years old, and those living on farms or in the country as compared in those living in town had statistically significantly greater percentages that had fired a rifle/shotgun or a handgun.

Males had higher proportions that had fired a rifle/shotgun or a handgun >20 times and had started firing them at a younger age as compared to females ($p < 0.001$ for all comparisons). Over one-half (55%) reported having gone hunting. Nearly a quarter (24%) of those that went hunting stated they first did so before they were 9 years old, nearly one-half (48%) before they were 11 years, and nearly three-quarters (72%) before 13 years of age. Overall, just greater than one-half (53%) had taken a firearm safety training course. Of these, 64% took a course when they were 13 years of age or younger. Of those that had fired a rifle/shotgun and/or a handgun, three-fifths (60%) had completed a training. Of those that had gone hunting, four-fifths (80%) had participated in a firearm safety course.

Conclusions:

Most FFA members have fired rifles/shotguns and handguns, and many do so at very young ages. Although many have taken a safety course, there are still significant percentages that have not received this formal training. Rural families should be advised when it is developmentally appropriate to consider introducing youth to firearms, and all should take a firearm safety training course before using them.

Objectives:

Attendees will Learn:

1. To understand at what ages rural youth are starting to shoot rifles/shotguns and handguns, and the frequency of their use.

2. To be able to list two factors that are associated with an increased proportion of rural youth having fired a rifle/shotgun or a handgun.
3. To be able to state the proportion of rural youth that have obtained firearm safety training and, in general, the ages that was first accomplished.

The Dark Side of Nighttime Off-Road Vehicle Use

Nicholas Stange, BS; AnnaMarie Fjeld, BS; Gerene Denning, PhD; Charles Jennissen, MD

Background:

Off-road vehicles (ORVs), which include all-terrain vehicles (ATVs) and side-by-sides (SxSs), are designed for off-road use only. Iowa law restricts roadway riding to occupational purposes and limits it to daylight hours. A growing number of Iowa counties are opening roadways to recreational ORV use and many counties are choosing not to include a daylight restriction. To better understand this issue, the study objective was to compare and contrast daytime and nighttime ORV crashes on Iowa's roads.

Methods:

Analysis was performed using Iowa Department of Transportation crash data from 2002 to 2017 to analyze potential differences between daylight and nighttime ORV crashes. Crashes at dawn and dusk were not included in the analysis (34 crashes, 5.7% of the total). Darkness was defined as 30 minutes after sunset and ended 30 minutes before sunrise as reported by the National Weather Service. Youth were defined as <16 years of age. All analyses were performed using SPSS (Statistical Package for the Social Sciences).

Results:

Five hundred fifty-nine crashes were analyzed. About one-quarter (142, 25.4%) occurred in the dark, with nearly identical proportions of males and females for day vs. night crashes. The proportion of nighttime crashes was higher for adults than for youth (30% vs 11%, <0.0001). In 48% of nighttime crashes, the vehicle operator was physically or cognitively impaired in some way (e.g. alcohol use). Impairment was only observed in 11% of drivers in daytime crashes. No child <16 years of age was noted to be impaired. A higher proportion of daylight versus nighttime crashes were on roads with speed limits >50 mph (57% vs. 34%, $p < 0.0001$); still, one-third of nighttime crashes occurred on roads with highway speeds. Motor vehicle crashes were more common during the day (35%) than at night (13%), $p < 0.001$. Fatal (15%) and major (49%) injuries occurred more frequently in nighttime crashes as compared to daytime (8% fatal, 39% major), $p = 0.003$.

Conclusions:

Operating ORVs on roads already represents a high-risk activity. The observation that a higher proportion of fatal and severe injuries occurred at night as compared to during the day suggests additional factors may contribute to the severity of crashes after dark. Targeted injury prevention strategies are clearly needed, including educating users about the dangers of roadway and nighttime operation, as well as better enforcement of state and local ORV safety laws.

Objectives:

Attendees will Learn:

1. To understand the factors involved and the differences between off-road vehicle (ORV) crashes that occur during the day and at night.
2. To be able to state at least two ways in which children are different than adults regarding ORV crashes at the night.
3. To be able to explain why ORV crashes at night involve a lower proportion of motor vehicle crashes as compared to those during the day.

Age-Dependent Differences in Playground Slide-Related Injury Mechanisms among Young Children

Cole Wymore, BS; Gerene Denning, PhD; Charles Jennissen, MD

Background:

A previous study of playground slide-related injuries in the National Electronic Injury Surveillance System (NEISS) found younger children were often injured while sliding on an adult's lap. However, the injury mechanism for all cases in that report was not determined. This study's purpose was to better understand slide-related injury mechanisms in young children.

Methods:

Slide injuries in children <5 years of age from 2002-2017 were identified (N=14,622) using the Consumer Product Safety Commission's NEISS. The mechanism of injury was coded using database narratives. Descriptive and comparative analyses (chi-square test) were performed using IBM Statistical Package for the Social Sciences (SPSS).

Results:

Falls (62%) were the most common cause of playground slide-related injuries. The next most frequent code was "injured on slide, mechanism unknown" due to insufficient narrative details (17%). This was followed by "injured while going down the slide on a lap" (6%) and "injured when the foot or leg was caught on the slide" (5%). The demographics and injury pattern suggested that the latter were mostly lap-related injuries. Falls commonly resulted in head/face/neck (44%) and upper extremity (40%) injuries and were associated with a significantly greater percentage of brain-related injuries compared to other mechanisms (14% vs 5%), $p < 0.0001$. Non-fall mechanisms had higher proportions of musculoskeletal injuries (60% vs 47%), $p < 0.0001$, which were primarily of the lower extremity. Fall-related injuries had a significantly higher proportion requiring admission or transfer as compared to other mechanisms (6% vs. 2%), $p < 0.0001$. The injury mechanism was a fall for 70% of those 3-5 years of age. This percentage went down with decreasing age: 62%, 42% and 25% for children 2, 1, and <1 years of age, respectively. Children <3 years old had a significantly greater proportion of lap-related injuries than 3-5 year olds. More than four-fifths of those injured who were coded as being on a lap or having caught their leg or foot on the slide were children <3 years of age, and over 90% of these had lower extremity injuries.

Conclusions:

Falls were the most common slide-related injury mechanism in older preschoolers. But in children <3 years old, there were increasingly greater percentages of lap-related lower extremity injuries. Healthcare providers and parents should be aware that a child's foot could catch on the slide when going down on a person's lap, and that the twisting force might cause a tibia fracture.

Objectives:

Attendees will Learn:

1. To recognize falls are the most common cause of playground slide-related injuries and are associated with a higher percentage of brain-related injuries and of having to be admitted or transferred than other slide injury mechanisms.
2. To understand non-fall injuries had higher proportions of musculoskeletal injuries.
3. To recognize those <3 years of age had fewer injuries related to falls and a greater proportion of injuries related to being on the lap of another individual while going down the slide, most commonly causing a lower extremity injury.

Education about Twitter Improves Injury Prevention Messaging, Participation, and Engagement in a Twitter Chat

Maneesha Agarwal, MD; Kristyn Jeffries, MD; Tiffany Davis, MPH, CPST-I; Purnima Unni, MPH, CHES; Joseph O'Neil MD; Wendy Pomerantz, MD, MS

Background:

Twitter provides an avenue for injury prevention (IP) advocates to share messaging. Despite growing research on Twitter's utility in healthcare, studies evaluating use in IP is limited. The goals of this study were to assess baseline use of Twitter amongst IP advocates, assess the impact of an educational intervention, and evaluate characteristics of a Twitter chat during National Injury Prevention Day 2020 (NIPD).

Methods:

Participants were Injury Free members that completed a pre-intervention survey on demographics and attitudes towards and usage of Twitter; these participants were also invited to complete a post-intervention survey after NIPD. All Injury Free members were invited to participate in the educational intervention, and Twitter training webinars prior to NIPD. Data were analyzed using descriptive statistics and paired t-tests for pre- and post-intervention responses. Additional data was abstracted from Keyhole and Twitter analytics.

Results:

Forty-four respondents (table 1) completed the pre-intervention survey; 29 (65%) completed the post-intervention survey. Of the 23 post-survey respondents who participated in a Twitter training webinar, 4 (17%) created new Twitter accounts. There was a significant increase in knowledge about Twitter ($t(12) = 4.38, p = 0.001$) and importance of using social media for IP messaging ($t(22) = 3.22, p = 0.004$) after the intervention. In association with NIPD, there were 3,06 posts using the designated #BeInjuryFree hashtag across 754 different users with a reach >3,000,000 and >14,000,000 impressions. Additionally, the Injury Free Twitter handle gained 186 followers.

Table 1. Demographics of Twitter webinar participants (N=44)

| | n (%) |
|--------------------------------|---------|
| Age, years | |
| 18-49 | 23 (52) |
| 50+ | 20 (45) |
| Gender | |
| Male | 5 (11) |
| Female | 39 (89) |
| Degree ^a | |
| MD | 13 (30) |
| MPH | 9 (20) |
| RN | 5 (11) |
| BA/BS | 9 (20) |
| Other ^b | 8 (18) |
| Professional role ^a | |
| Program manager | 15 (34) |
| Physician | 13 (30) |

| | |
|---|---------|
| Injury prevention educator | 18 (41) |
| Community outreach worker | 13 (30) |
| Other ^c | 8 (18) |
| Has Twitter account | 28 (64) |
| Aware of Injury Free Twitter | 28 (64) |
| Manages institutional social media | 10 (23) |
| Barriers to using social media ^a | |
| Professionalism concerns | 12 (27) |
| Too little time | 25 (57) |
| Unsure how to get started | 7 (16) |
| Questionable utility | 10 (22) |

* n=43 for age and degree

^aCategories are not mutually exclusive.

^bOther includes MS, MEd, MBA, MA, MSN, DrPH, DNP, LPN, Masters in Quality Improvement/Safety

^cOther includes Program coordinator, Public health faculty member, Director of injury prevention, Research coordinator, Epidemiologist, Grant specialist, Business manager

Conclusions:

Education positively improved Twitter engagement amongst IP advocates. There was a robust engagement of IP advocates and the general public as part of the NIPD Twitter chat. Additional Twitter training and support may continue to enhance the reach of Injury Free.

Objectives:

Attendees will Learn:

1. To recognize Twitter can be used to spread injury prevention messaging across injury prevention programs and to the general public.
2. To understand Twitter skills can be taught and used to enhance public awareness of injury prevention messages.
3. To determine there are identifiable barriers to Twitter use across Injury Free sites that can be addressed as an organization.
4. To understand Injury Free and affiliated sites can leverage Twitter to enhance general awareness of its presence, mission, and messaging.

Injury Prevention Outreach In A Pediatric Emergency Department

Eric Jorge, MD; Iman Omairi; Alicia Webb, MD, Michele Nichols, MD; Kathy Monroe, MD

Background:

Injuries are the number one cause of death in children. Studies have shown that providing education along with safety equipment increases the likelihood of parents implementing safety-related anticipatory guidance. Through a partnership between the pediatric emergency department (ED), school of public health, and hospital philanthropic foundation, this project surveyed parents about specific injury prevention behaviors and provided education and free safety equipment to at-risk populations. Our goal was to show the usefulness of a dedicated research assistant and partnership with local stakeholders in implementing an ED-based injury prevention program.

Methods:

A Masters of Public Health student was recruited as the research assistant for the study. After IRB approval, the student researcher approached families in the ED of a large, urban pediatric hospital to offer enrollment. The convenience sample was obtained during a two-month window in the fall of 2019. Families were surveyed regarding the presence and storage of firearms and medications in their home, in addition to their knowledge of CPR and basic demographic information. Based on survey responses, tailored educational handouts were reviewed and corresponding safety equipment (firearm cable lock, medication lock box, toilet lock, and/or pool watcher tag) were provided free of charge. Funding for the safety equipment was provided by the children's hospital philanthropic foundation. Process measures of number of children affected and number of products given were obtained. Follow up calls assessed use of and satisfaction with the provided safety equipment. Data was analyzed using the SAS frequency procedure.

Results:

The researcher spent a total of 139 hours in the ED and 41 hours conducting follow up phone calls. 357 out of 405 (88%) families approached were enrolled, averaging over 2.5 families per hour spent by the researcher in the ED. The enrolled families included 817 children. The majority of participants were unsafely storing medications (~90%) and firearms (~50%). A total of 236 firearm cable locks, 316 medication lock boxes, 195 toilet locks, and 275 drowning prevention pool watcher tags were distributed. 55% (176 of 320) of participants completed follow up phone interviews. Of those who participated in the follow up interview, 88% reported using the medication lock box, 67% used the firearm cable lock, and 48% used the toilet lock.

Conclusions:

The pediatric ED setting is an excellent location for injury prevention education and intervention. Partnering with a School of Public Health and local philanthropic foundations could result in the establishment of a consistent and effective injury prevention program in the pediatric ED. Tailored education and provision of safety equipment resulted in moderate to significant implementation of recommendations per report on follow up interviews.

Objectives

Attendees will learn to:

1. To foster collaboration between a variety of entities within the healthcare system.
2. To identify the pediatric ED as an effective place for injury prevention education and intervention.
3. To recognize the efficacy of tailored injury prevention education in combination with provision of safety equipment.

Feasibility of Universal Suicide Screening in a Pediatric Emergency Department

Samantha Roberts, MPH; Danielle Chenard, MPH; Deborah Berns, BS; Kevin Borrup, DrPH; Steven Rogers, MD

Background:

Suicide is the second leading cause of death for ages 10 – 34 years in the United States. Rates in adolescents have been climbing over the last decade and focus on prevention should be a priority. Implementation of universal suicide risk screening in pediatric emergency departments (PED) may provide early detection and intervention for at risk youth.

Methods:

Monthly quality improvement data monitoring was implemented with the adoption of a universal suicide screening and risk assessment process in the PED. Children were asked a validated brief suicide screening by nursing staff and if positive had a risk assessment performed by providers and/or social work. Responses were determined to be acute positive, non-acute positive, negative, not developmentally appropriate, incomplete, or not asked. All children 10 and older presenting to the PED were tracked. Feasibility was determined by measuring screening/risk assessment compliance, declined screenings, and high/low risk positive screens. Demographics were analyzed to determine any associations.

Results:

6,537 children 10 and older who presented to the PED from August to December 2019. 5723 (88%) received a brief screen by a nurse. This resulted in 906 (17%) positive screens; 609 (11%) had behavioral chief complaints; 297 (6%) had non-behavioral (medical) chief complaints; 52 (6%) children who screened positive were only 10 years old. Nine (<0.1%) parents declined screening. Providers completed 689 (90%) risk assessments; 327 (36%) scored as high risk. Females ($p<0.05$) and “non-Hispanic or Latino” ($p<0.05$) children had a significant association with positive brief screens. There were no significant differences among other demographic groups.

Conclusions:

Universal suicide risk screening for adolescents is feasible in a PED for patients 10 years and older. Screening and risk assessment compliance rates were high (>85%). Suicidal thoughts and/or behaviors were prevalent in children presenting to the PED with non-behavioral chief complaints and even more prevalent amongst those presenting with behavioral health concerns. Identifying all at risk youth and providing them resources may improve patient safety. PEDs with limited resources may consider focused screening for females and non-Hispanic or Latino patients.

Objectives:

Attendees will Learn:

1. To describe the implementation of universal suicide risk screening in pediatric emergency departments (PED) may provide early detection and intervention for at risk youth.
2. To determine the feasibility of implementing universal suicide risk screening and risk assessment in a PED.
3. To identify high screening compliance rates of providers.

Our Firm Recommendation: Measuring the Softness of Infant Sleep Surfaces

Sheena Gillani, MD, MPH; Gina Lowell, MD, MPH; Kyran Quinlan, MD, MPH

Background:

During the 1990s, the “Back to Sleep” campaign helped reduce deaths attributed to sudden infant death syndrome; however, progress plateaued by 1999. Since then, ~3600 Sudden Unexpected Infant Deaths (SUID) have occurred annually in the United States. Approximately 25% of SUIDs are caused by accidental suffocation and strangulation in bed, with soft bedding use being a significant risk factor. Therefore, The American Academy of Pediatrics (AAP) recommends infants sleep on a “firm” surface, though no objective definition and no national standard has been established. The purpose of this project is to demonstrate the performance of a device that measures mattress softness and to provide quantitative values of softness for various infant sleep surfaces.

Methods:

In collaboration with the authors and a national child product safety organization (Kids in Danger), University of Michigan engineering students designed and validated a device that simulates a 2-month-old’s head and measures the vertical depression (softness) that occurs on a sleep surface. A total of 17 infant sleep surfaces -14 household surfaces and 3 hospital beds - were measured between April 2019 and January 2020. The 14 household surfaces included infant crib and bassinet mattresses (1 used, 4 new), adult mattresses (5 used, 1 new), and sofas (3 used). Each surface was measured 3 times in 3 locations (right upper corner, middle center, left upper corner), with the device settling at each location for 2 minutes. The average softness at each location and then the average of all three locations (overall average) were calculated for each surface. Surface softness was also measured using soft bedding, which included an infant fleece blanket, and firm/soft pillows.

Results:

The overall average softness for the 14 household sleep surfaces ranged from 07-35 mm. The 2019 cribette and the 2018 infant spring had the same softness (21mm) as the 2019 adult foam and 2015 sofa. An infant’s fleece blanket folded once added an additional 03-07mm of softness, folded twice added 05-12mm, and folded three times added 11-22mm. Using a firm pillow added 04-21mm of softness while using a plush pillow added 25-46mm. The overall softness for the 3 hospital sleep surfaces ranged from 14-37mm, with the infant bassinet being the firmest and the pediatrics bed being the softest.

Conclusions:

In summary, we found that there is a wide range of softness among sleep surfaces, with some infant mattresses as soft as some adult mattresses. Adding blankets and pillows to mattresses significantly increased softness. Quantifying surface softness will advance our understanding of how softness relates to SUID risk. We hope this new information will further inform current AAP guidelines and improve mattress safety standards nationally. Future work includes measuring sleep surfaces of SUID cases in Chicago (Summer 2020) and identifying the ideal range of softness for infant sleep surfaces.

Objectives:

Attendees will Learn:

1. To recognize infant mattresses, in both the home and hospital, can be as soft as or softer than adult mattresses.
2. To understand adding soft bedding like blankets to a mattress greatly increases the softness of the sleep surface.

3. To discuss how using soft pillows increases the overall softness more than fleece blankets and firm pillows.

Association between Autism Spectrum Disorder and Poisoning in Children

Ashley Blanchard, MD, MS; Stanford Chihuri, MPH, PhD; Guohua Li, DrPH, MD

Background:

Autism spectrum disorder (ASD) is a neurodevelopmental diagnosis characterized by persistent deficits in social interaction and communication skills and restricted, repetitive patterns of behavior and interests. The reported prevalence of ASD in the United States has more than doubled in the past two decades. Recent studies indicate that ASD is associated with increased morbidity and mortality from certain types of injuries, such as drowning, suffocation, asphyxiation, and self-harm. Children with ASD are often prescribed multiple medications, placing them at risk for intentional and accidental poisoning. We assessed the association of ASD with poisonings treated in emergency departments (ED) among children aged 1-20 years, using data from the 2018 Nationwide Emergency Department Sample (NEDS).

Methods:

NEDS is the largest all-payer ED database in the United States. We analyzed proportions, 95% confidence intervals, and odds ratios of weighted and unweighted ED visits from 2018, comparing poisoning among children with and without ASD. Poisoning cases were identified according to the ICD-10-CM external cause-of-injury matrix.

Results:

The 2018 NEDS recorded a total of 7,509,161 ED visits for poisonings in children aged 1-20 years. Poisonings accounted for 2.42% (1220 out of 50,334) of the visits made by children with ASD and 1.47% (109,628 out of 7,458,827) of the visits made by those without ASD, yielding a crude odds ratio (OR) of 1.67 [95% CI: 1.57, 1.76]. Compared to children without ASD, intellectual disability, and attention deficit hyperactivity disorder (ID/ADHD), the estimated ORs of being treated for poisoning in the emergency room were 1.54 (95% CI: 1.44, 1.64) for children with ASD and without ID/ADHD, 2.96 (95% CI: 2.87, 3.06) for children with ID/ADHD and without ASD, and 2.58 (95% CI: 2.30, 2.89) for children with ASD and ID/ADHD. The estimated ORs of poisoning associated with ASD were similar between sexes. When this association was examined by age group, children ages 5-9 years had the greatest odds of poisoning-related ED visit (OR 2.29, 95% CI: 2.04, 2.57).

Conclusions:

These findings suggest that ASD is associated with a significantly increased risk of poisoning and that comorbid ID/ADHD may explain some of the excess risk of poisoning in children with ASD.

Objectives:

Attendees will Learn:

1. To understand the increased odds of poisoning related ED visits for children with ASD.
2. To evaluate the epidemiologic factors associated with an increased odds of poisoning among patients with ASD evaluated in the emergency department.
3. To describe targeted interventions to decrease accidental and intentional poisonings among children with ASD.

Mobility Vehicles and Pediatric Injury

John Nichols, BS; Kathy Monroe, MD, MSQI; Annalise Sorrentino, MD; Nipam Shah, MBBS, MPH

Background:

Injuries are the number one cause of death in children and cause significant morbidity. Common scenarios for injury include vehicles that allow children to be mobile and independent (example ATV- all terrain vehicles, dirt bikes, bicycles, skateboards, and scooters). We present a review of these external causes of injury for our institution.

Methods:

Following IRB approval, the electronic medical record of a free-standing children's emergency department was queried to identify all patients with an injury related to ATVs, motorcycles, dirt bikes, bicycles, skateboards, or scooters during a one-year period (2019). Demographic information along with injury specific (body part injured, site where injury occurred, mechanism) and helmet usage were collected and analyzed.

Results:

A total of 246 patients were identified as meeting criteria for inclusion with the following causes of injuries- 104 bicycle, 74 ATV, 25 dirt bike, 14 motorcycle, 16 scooter and 14 skateboard. Ages of patients ranged from 2 years to 18 years of age with the greatest range being noted for bicycles (2 years to 17 years) and ATVs (2 years to 16 years). The mean age was higher for motorcycle and skateboard (13 and 11.6 respectively) and lowest for bicycle (9). Many of the injuries were to passengers on these modes of transportation (most of which are not designed to carry passengers). The majority of (overall study (97%) and for each mode of transportation) patients were Caucasian which is in contrast to our overall ED population, which is only 42% Caucasian. The majority of patients were male (n=181 (74%)). 140 of the 246 (57%) were not wearing a helmet (with only 10 charts having no documentation of helmet use). 60% of the ATV riders were not wearing helmets at time of injury with an additional 5 patients who reported their helmet came off. The lowest percentage of riders reporting appropriate helmet use was skateboarders with only 14% wearing helmets, and the highest percentage was dirt bike riders with 80% reporting helmet use.

Conclusions:

Common scenarios for injury include vehicles that allow children to be mobile and independent. Most of these injuries were found in Caucasian males between the ages of 9-12 with low rates of helmet use. It is no surprise that the study found many pediatric patients to be injured on these vehicles because most are not designed to carry passengers.

Objectives:

Attendees will Learn:

1. To recognize mobility vehicles are often used for recreation in children and frequently lead to injury.
2. To assess common injury types associated with mobility vehicles.
3. To identify safety equipment usage rates for mobility vehicles.

Changing Habits and Culture: Instituting a Safe Sleep Program for the Pediatric Inpatient Environment

Daniel Hershey, MD; Christine Lenzen, MD; Lorrie Lynn, MA

Background:

Nationwide, there are about 3500 SIDS (Sudden Infant Death Syndrome) deaths each year, making SIDS one of the most common causes of death under age 1. In 2017, after a maternal overlay death on the inpatient medical floor, the Safe Sleep Task force at Rady Children's Hospital (San Diego) was started. Despite some initial gains, by the end of 2019, Safe Sleep bed compliance that had stabilized around 50%.

Methods:

An interdisciplinary team (pediatric hospitalists, nursing leadership from various units, and child safety leadership) established a task force in 2017. PDSA circles were informed by input from key stakeholders and discussion with hospital QI leadership. Interventions included an updated online Safe Sleep education module (for nurses and respiratory therapists), making the online module mandatory for all medical units (previously excluded oncology and ICUs), and adding signs at linen carts that discouraged adding extra bedding to infant cribs. Regular bed audits for children under one year of age were reestablished.

Results:

Uptrend in percent of safe sleep beds was demonstrated in audits from 2017-2020 (figure 1 & 4). After a loss of momentum in 2019, we increased compliance with Safe Sleep recommendations by over 25%. Safe Sleep compliance average of 49% in 2019 to 79% in 2020 (figure 3). The number of bed infractions per crib has also improved significantly since 2017 (figure 2). As more units, nurses, and RTs became involved, culture changes, and the expectation for Safe Sleep has developed.

Figure 1:



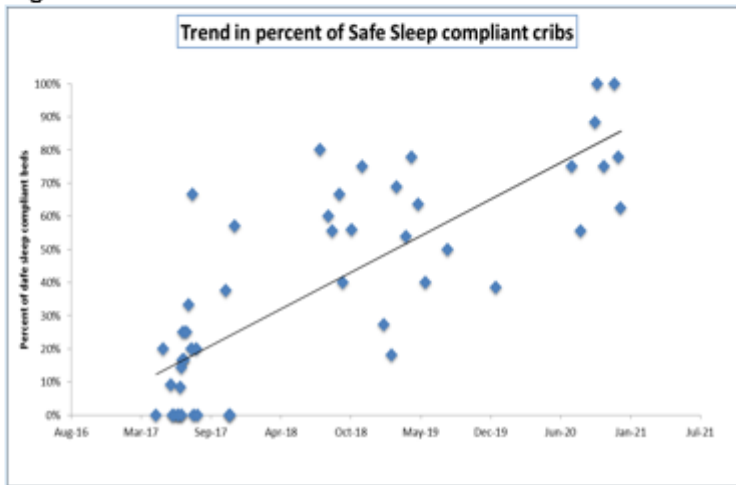
Figure 2:



Figure 3:



Figure 4:



Conclusions:

Bed audits are critical to improve adherence to Safe Sleep practices in the hospital. We have found this provides education opportunities both for staff and families, but also demonstrates to all the importance of Safe Sleep at our institution. Universal expectations for completion of mandatory online Safe Sleep module for all clinical staff, which also contains questions that address some of the issues frequently encountered on our bed audits, is also thought to be key. As more units and more ancillary staff are involved, the culture of Safe Sleep seems to grow within the hospital. This may insulate against variance created by float and traveler coverage. Next steps include: involving the night staff in the bed audit process spread to our NICU

and associated satellite units. Integrated standard Safe Sleep education materials across the RCHSD inpatient and outpatient environments

Objectives:

Attendees will Learn:

1. To discuss a Quality Improvement approach to increasing Safe Sleep compliance.
2. To evaluate possible interventions to improve Safe Sleep compliance, many of which should be applicable in different hospital settings.
3. To describe a multi-disciplinary approach to improve Safe Sleep compliance.

The Dangers of Off-Road Vehicles to Youth: Not Something to Kid Around About

Anna Marie Fjeld, BS; Nicholas Stange, BS; Gerene Denning, PhD; Charles Jennissen, MD

Background:

Children are not allowed to operate motor vehicles such as cars until they are 16 years old due to the risks associated with the operation of such powerful machines. Yet, the operation of off-road vehicles (ORVs) by youths under 16 years old has been largely normalized in both rural and urban communities, despite the significant safety risks involved. To better understand this issue, the goal of this study was to characterize roadway ORV crashes with youth operators, including riding behaviors and crash outcomes, in a Midwest state.

Methods:

This study examined ORV roadway crashes involving operators <16 years of age (115 crashes) that were documented in Iowa Department of Transportation (DOT) records from 2002-2017. Descriptive and comparative analyses was performed using the Statistical Package for the Social Sciences (SPSS).

Results:

In Iowa's pediatric roadway crashes from 2002-2017, 63% of victims were male and 81% were 12-15 years old. Females were more commonly passengers than were males (60% vs. 24%), as were younger (<12 years) as compared to older riders (56% vs. 26%). Only a small percentage of victims were helmeted, 24% of operators and 14% of passengers. Additionally, 73% of all roadway crashes involved multiple riders on the ATV, around 40% occurred on paved roads, and 82% occurred in rural areas. Collisions with an object or another vehicle were the mechanism in 65% of crashes. Roads with speed limits over 50 mph were the location of around half (52%) of all crashes. Among pediatric victims, 3.5% were killed in the crash and 46% of the pediatric roadway crashes resulted in either major injury or death. Moreover, a higher proportion of the fatal or incapacitating injuries were observed in adolescents (12-15 years) than in younger children (35% vs. 23%).

Conclusions:

Our results illustrate that multiple risky behaviors are common among youth in roadway ORV crashes, including riding on high speed roads, with passengers, and/or without helmets. Adolescents (12-15 years old) are the large majority of pediatric victims, and serious injury or death resulted in almost half of all crashes. Based on these results, it is clear that multiple targeted approaches are needed for youth under 16 years old in order to prevent pediatric fatalities and severe injuries, particularly on the road.

Objectives:

Attendees will Learn:

1. To understand how roadway use is an important factor in the deaths and injuries sustained by youth on off-road vehicles (ORVs), which are designed for off-road use only.
2. To be able to list three high risk behaviors that are common for youth when riding on roadways with ORVs, and that may increase the probability of death and injury when participating in this dangerous activity.
3. To be able describe the primary mechanisms involved in ORV crashes on roadways, and why the majority of crashes do not involve a collision with another vehicle.

Evaluating a Community-Based Car Seat Inspection Station

Tiffany Davis, MPH, CPST-I; Michelle Chappelow, RN, CPST-I

Background:

Riley Hospital for Children has had a child passenger safety program, for in-patients and their siblings, for over 15 years. During that time, capacity for the child passenger safety program to expand services to the community did not exist. In 2018, a car seat inspection station was able to open to serve the general community. The purpose of this program was, and still is, to decrease motor vehicle crash injuries and deaths due to improper child passenger safety, for not only Riley's pediatric population, but for the children in the Indianapolis community as well.

Methods:

Riley Hospital's injury prevention program and child passenger safety program partnered together staff, time, resources, and funding support to open a car seat inspection station to the general community for the first time. Appointments were and are still being held once a week, for approximately 4-6 hours. Inspections are appointment only. Appointments can be conducted in both English and Spanish. 2018-2019 data was pulled to evaluate progress and populations served. Descriptive data analysis was performed using both quantitative and qualitative information collected during appointments.

Results:

The community-based car seat inspection station saw 429 families, and 675 children. Out of the 675 children, 553 (82%) demonstrated a financial need for a car seat or replacement. Because some of the funding for car seats came through a grant requiring race, ethnicity, and health insurance reporting, we saw majority Black, Non-Hispanic families on Medicaid or Medicaid equivalent health insurances. Upon arrival, 52.4% of car seats were installed with the seat belt, 19.4% were un-installed completely, and 66.4% of car seats were not secured per manufacturer instructions. Regarding harness misuse, 30.9% of harnesses were too loose, followed by 24.2% of retainer clips placed in the wrong position. Regarding lower anchor misuse, 40.6% were too loose, followed by 17.2% were used in conjunction with the seat belt. Regarding top tether misuse, 80.8% were not used when they should have been. Regarding seat belt misuse, 33.2% of seat belts were too loose, followed by 21.9% of switchable retractors not being locked when they should have been. Successes included providing needed resources and education to community members in financial need, but there were many challenges along the way. Challenges included, and continue to include: scheduling appointments, maintaining funds and capacity for the large need of car seats, cultural barriers for minority populations (i.e. Indianapolis has a large Nigerian refugee population), and social barriers (i.e. custody/foster care/Department of Child Service situations, caregivers suffering from substance misuse and recovery).

Conclusions:

The community-based car seat inspection station, at Riley Hospital for Children, has served many people from the Indianapolis community; working to gain more information about car seat misuse and populations in need. Success has been seen, but many challenges have also been identified. As the program continues to evolve, Riley Hospital intends to share this information and adapt to the needs of the community.

Objectives:

Attendees will Learn:

1. To describe a community-based car seat program in Indianapolis.
2. To identify major areas for misuse in car seat and harness installation.

3. Recognize community-level challenges for teaching car seat safety to lay-people in the community.

Driver's Education for Teens

Robert Gakwaya, MD; Asia Simpson, BS; George Han, BA; Ryan Lindsay, BS; Mariann Manno, MD; Michael Hirsh, MD

Background:

Motor vehicle crashes (MVCs) pose the greatest public health threat to teens in the US. Despite advances in car safety technologies and policy change implementations like Graduated Drivers Licenses (GLDs), MVCs remain the leading cause of death for adolescents and young adults in the US. In our previous study "Teen Reality Intensive Driver's Education (Teen RIDE)", we were able to demonstrate that through exposure and didactics, the recidivism rate among participants (teenagers between 13 and 17 years who had been arrested for the first time for a serious driving offense) was significantly lower compared to their peers in the control group. Our current intervention Teens Driver's Education aims to apply lessons from Teen Ride to act and prevent driving offenses. The project provides free access to driver's education to teenagers from disadvantaged communities in and around Worcester, MA.

At the completion of the program, participants obtain a driver's license. Unlicensed teens drivers are more likely to be involved in fatal crashes as well as to engage in high-risk driving behaviors including impaired driving, driving over speed limits, and driving unrestrained. Unlicensed driving is associated with early introduction to Juvenile Courts. Juvenile Courts resort to penalty as remedial measures. However, the 2010 Healthy People Objectives for the nation noted that penalty-based strategies have not improved the safety of teenager driving. Contact with the juvenile justice systems results in subsequent challenges that affect these teenagers' prospects of education and employment. Furthermore, these unlicensed teens were more likely to identify as Black or Hispanic, from inner cities, and less likely to have had a driver's education class. In view of lack of significant improvement in safety of teenager driving with penalty-based strategies and substantially negative impact on education and employment prospects, especially minority inner city teens, access to driver's education becomes crucial.

Methods:

In collaboration with local public school system and NGOs that work with at risk youth, participants are selected and enrolled. The classes are taught by AAA and follow standard driver's education curriculum. After completion of the classroom portion, participants graduate to the hands-on driving skills portion. After completing the required supervised driving hours, participants register for learner's permit and road tests as required by the state, and ultimately earn a driver's license. In retrospective, participants will be compared to their peers in the community who did not participate in any driver's education.

Results:

The recidivism rate for Teen RIDE participants 6 months after the course is 6% with 0% reoffending more than once. The CG has a recidivism rate of 56% 6 months after the arrest, and 14% have more than one re-offense. The CG is 13.062 (4.296Y39.713) times more likely to reoffend, and this is significant ($p < 0.001$)

Conclusions:

Teen RIDE provided an impactful exposure to the consequences of risky driving behaviors to teen participants. Teen RIDE participants are less likely to reoffend after completion of the course.

Objectives:

Attendees will Learn:

1. To understand preventative measures can be put in place to decreased teen driving offenses, MVCS and associated morbidity and mortality.
2. To recognize consequences associated with teen unlicensed driving.
3. To describe the impact teen driving offenses have on education and employment prospects.

Evaluating an Urban Pediatric Hospital's Scald Burn Prevention Program

Rochelle Thompson, MS; Ross Budziszewski, MS; Autumn Nanassy, MA; Brooke Burkey, MD

Background:

The American Burn Association reported that 486,000 hospitalized burns occur annually. Roughly 34% of these are scald burns, which are caused by contact with hot liquid, steam, or objects. Children younger than 5 years of age are at the greatest risk for scald burns. Caregiver burn prevention programs have found that education is critical to reduce the prevalence of scald burns in young children. However, low-income and underserved populations do not always have access to these resources. Our institution implemented a one-hour prevention program for caregivers to educate caregivers on scald burns, prevention tips, and provide them with tools (e.g., stove knob covers, electrical outlet covers, bathwater testing ducks) to keep their child(ren) safe. The objective of this program evaluation is to analyze caregiver knowledge gains and the effectiveness of our Scald Burn Prevention Program.

Methods:

We developed a Scald Burn Prevention Program that invited caregivers who had children five years or younger in our hospital to participate from 2018-2019 (ten-month period). The one-hour program provided caregivers with background knowledge regarding scald burns, prevention tools, and creating safe guards in their homes such as "NO KID ZONES" to keep children out of the kitchen and other areas where children are at risk. Our Injury Prevention Coordinator had caregivers complete a pre-post knowledge assessment to evaluate the caregiver's ability to identify hot or not hot objects as well as respond to items about their perception of the program's utility, willingness to share this information with others, and the likelihood that they will use the information. At the end of the program, caregivers received prevention items that they did not have in their home already such as bathwater testing ducks, reading packets, travel mugs, and child safety gates to create safer environments for their children.

Results:

269 caregivers participated in the Scald Burn Prevention Program and over 700 prevention items were distributed. Before the program, caregivers could identify hot objects 83% of the time, but after the program, they were able to identify these items 92% of the time: $t(233) = -3.71, p < .001$. The majority (95%) of caregivers indicated that the program was helpful, 99% stated that they were likely to share this information with others, and 100% indicated that they would use the information from the program.

Conclusions:

Results indicate that a hospital-led Scald Burn program increased caregiver ability to identify scald burn risk-factors and that the program was useful. Education is a crucial component to increase awareness of and prevent scald burns. Providing education to caregivers who typically do not receive this information could lower the prevalence of scald burns institutionally and in surrounding communities through knowledge dissemination.

Objectives:

Attendees will Learn:

1. To recognize the importance of scald and burn education programs.
2. To adopt and develop scald and burn programs in hospitals.
3. To evaluate the efficacy of short educational hospital-led programming.

Partnering to Implement a Competency-Based and Medically Accurate Babysitting Program in an Urban Setting

Gia Ramsey, BSAS, ADN, LPN, CPST-I; Julia Glauboch, RN, BSN, BA

Background:

In 2016, a large hospital in a major US city opened its doors as a new Level I Adult and Level II Pediatric trauma center. The trauma center is located in a zip code where many pediatric injuries occur under the supervision of older siblings. Within the first six months in operations, it was clear that there was a need for an educational program targeting the older sibling population.

Methods:

Safe Sitter was chosen as the program to implement. Safe Sitter is a competency-based and medically accurate program designed for middle school students in grades 6-8 to learn how to be safe when they are home alone, watching younger siblings, or babysitting. For over 35 years, this program has been successful in educating young teens on safety skills, childcare skills, first aid and rescue skills, and life and business skills. Following a successful first year of programming, two hospitals collaborated to begin serving a larger population, adding instructors and courses to accommodate the high demand. The second hospital, also a Level I Adult and Level II Pediatric trauma center became a Safe Sitter site. Initially the first hospital site started with 3 instructors and 3 courses in the first year. Now three years into the program, the two hospitals are continuing to expand their reach and partner with other community organizations and trauma centers to other areas of the city.

Results:

Since the first trauma center became a Safe Sitter site, collectively 200 students have completed the course. Between sites, there are 8 instructors teaching courses throughout summer break and other school breaks throughout the year. There is such a high demand on courses that the two hospitals have over 200 students on a waiting list, and 25 community organizations and groups interested in hosting courses for their young teens.

Conclusions:

Unintentional injuries are the leading cause of death for children in United States, and caregivers play a major role in preventing childhood injuries. Safe Sitter fills a critical education gap in injury prevention programming for middle school students by teaching them the life and safety skills they need to decrease injuries, both among themselves, and the children they care for.

Objectives:

Attendees will Learn:

1. To recognize the importance of partnering with other hospitals to increase outreach efforts.
2. To understand how Safe Sitter fills an education gap in injury prevention programming for young teens.
3. To identify the different components of the Safe Sitter program.

Running on Empty: Sustaining Child Passenger Safety Programs in the absence of funding

Lorrie Lynn, MA; Mary Beth Moran, MS, M.Ed, PT

Background:

Child Passenger Safety continues to be a key injury prevention strategy for children. Child passenger safety education and CPST inspections have a proven impact on keeping kids safer when traveling. A robust Child Passenger Safety program is often dependent on external funding sources. In this case, after thirty years of funding ended, the Child Passenger Safety Program transformed to the Transportation Safety Program. The Transportation Safety Program developed a fee for service business model to keep community car seat inspections a viable option for parents and caregivers.

Methods:

The Transportation Safety Program is a component of Safe Kids San Diego and the Center for Healthier Communities. As part of these organizations, the program has procured various resources that provided the infrastructure to begin a fee for service model. These resources include a cargo van; pop up tents, signage and an interactive website that enables families to schedule appointments online. We conducted a market review of fee for services costs in our area, we calculated cost for staffing, and determined the volume of service needed to meet a small margin of profit to sustain the program. To minimize costs, we chose a fixed-point inspection station and utilized our existing resources. To market our program we leveraged opportunities through the hospital's social media page, opportunities for earned media, and promotion through other community events hosted by The Center. To support our fee for service program we sourced supplemental grants such as the Buckle Up for Life Grant to supplement our services with education and car seats. We instituted a pre-paid mail system to recover rental items and reduce costs to replace product needed for special needs.

Results:

In 2018, the first full year of implementation, the program provided services for 116 families, 5% were families with children with special needs. We distributed nine car seats through the contribution of Buckle Up for Life. The revenue earned \$4,930.00 from appointments and rental fees for Special Needs. In 2019 the program served 158 families with 8% being special needs. We were able to distribute 3 free seats and earn bring in \$5834.00 from appointments and rental fees for Special Needs.

Conclusions:

A robust child passenger safety program can be sustained without external funding. Leveraging existing resources, detailed tracking of costs and revenue and making timely strategic modifications have been the key to our success. Promotion of the program and ongoing solicitation for grants to support services for low income families is an ongoing effort. Collaborations with other hospital systems, including labor and delivery are an opportunity for growth and potential fixed point services at other sites.

Objectives:

Attendees will Learn:

1. To identify an alternative strategy for maintaining consistent child passenger inspection events.
2. To evaluate a fee for service business model.
3. To develop process improvement strategies to assess barriers and opportunities for growth.

Chicago Violence Research Agenda and Recommendations to Support Community Engagement

Alexander Ellyin, MPH; Kelli Day, MPH; Jacqueline Samuel, PhD; Dion McGill, BA; Karen Sheehan, MD MPH; Rebecca Levin, MPH

Background:

Chicago has a long history of violence with some neighborhoods, particularly black and brown communities, being disproportionately affected compared to others. This includes the disproportionate impact of gun violence on African American male youth. Often violence prevention research is developed and carried out with little or no input from the people who live in the communities most affected by violence. The objective of the Community-Academic Collaboration to Prevent Violence in Chicago (CACPVC) was to bring together academic and community stakeholders to create a research agenda and a list of recommendations to engage various stakeholders in violence research.

Methods:

From 2013 to 2017, community members and community organizations from seven regions across Chicago participated in this project. An organization network gathering was held in each area to allow researchers, funders, and community organization representatives to discuss violence prevention. Open community forums also took place in each community where any community member over 18 years in age could participate in smaller focus groups. The number of participants in these 14 community meetings ranged from 5 to 40. Results from these meetings were thematically coded and grouped by the principal investigator, then compiled. This compilation was refined by the CACPVC workgroup, allowing for investigator triangulation. For research agenda development, a survey was also administered to individuals affiliated with the organization leading the research project.

Results:

Main topic areas identified in the violence research agenda included research questions in the following areas: root causes/cycle of violence, racism and bias/structural violence, the trajectory of violence, protective factors and nonviolence, geographic patterns, violence prevention strategies, youth, family factors, community factors, school, police, gangs/street organizations, and media and public perceptions. The recommendations to support community engagement were grouped in the following areas: role of research in reducing violence, role of community in violence research, relationships and respect, academic-community communication, financial considerations, training, practical considerations, research design, sharing results, communication about data and use of data, and recommendations for funders.

Conclusions:

The violence research agenda will inform future community-engaged research efforts. The recommendations to support community engagement provide a resource for researchers on how to respectfully and meaningfully engage community members in future research projects.

Objectives:

Attendees will Learn:

1. To identify strategies to meaningfully engage community members in developing a research plan.
2. To describe how to create a partnership of academics, community members, and funders to address violence.
3. To delineate the violence research agenda developed by the community.

Assessing Improvements of a Pediatric Emergency Department Referrals to a Hospital-Based Violence Intervention Program

Jayda Watkins, BS; Na'il Scoggins, BS; Brooke Cheaton, MBA; Mark Nimmer, BA; Michael Levas, MD, MS; Shannon Baumer-Mouradian, MD; Marlene Melzer-Lange, MD

Background:

Youth violence is a major public health concern in the United States. Hospital-Based Violence Intervention Programs (HVIPs) are integral in connecting youth sustaining interpersonal violence-related injuries to medical, mental health, and social services. At our pediatric emergency department, our baseline referral rate to the established HVIP was 29%. We aim to increase referrals to HVIPs services from 29% to 70% within 24 months for patients ages 7-18 years who present to our emergency department with a violent injury.

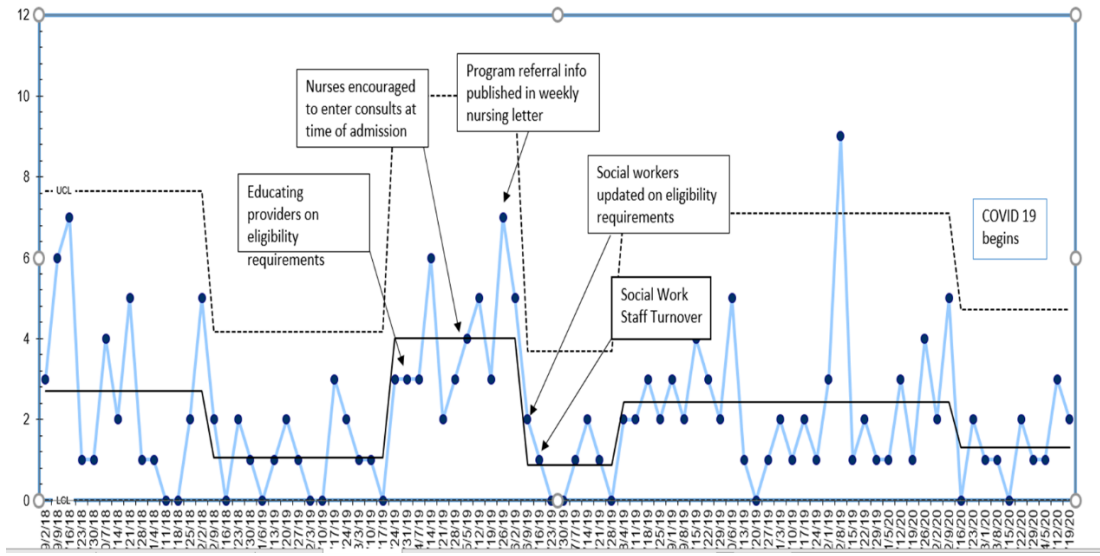
Methods:

We performed process mapping of the referral process that included ED triage, primary nursing intake, provider care, on-line paging systems, and social work interventions. We interviewed key stakeholders including nurses, social workers, and providers to identify specific interventions. We used the model for improvement and PDSA cycles to inform our project. Our primary outcome measure was the number of patients referred to our HVIP and all measures were analyzed using statistical process control charts. Our key interventions were: 1. Educating providers on eligibility requirements 2. Encouraging nurses to enter consults at the time of admission in triage; 3. Publishing information about program referrals in the weekly nursing newsletter 4. Updating social workers on eligibility requirements for the HVIP. We included all patients between the ages of 7 and 18 who had diagnoses consistent with injuries related to assault, stabbing, or gunshot wounds in a Level 1 pediatric emergency department/trauma center.

Results:

From 2018 to 2019, there were 145 referrals to the HVIP, out of 390 eligible patients. The referral rate improved from 29.6% pre-intervention to 39% post-interventions but was not sustained as we experienced significant social worker turn over shortly after achieving this improvement (Figure 1). We are working to incorporate the referral process via best practice alerts in the electronic health record to improve sustainability.

Figure 1: Number of ED patients referred to HVIP (C chart)



Firearm Injury Prevention in Adolescents Presenting with Suicide Ideation or Attempt in a Pediatric Emergency Department

Ashley Cleary, MA, CHES, CPST; Frannie Kaczor, MSW; Maisie Finnegan, CPST; John Schimek, MD; Abby Egen-Schimek, MD; Erin O'Donnell, MD; Marlene Melzer-Lange, MD

Background:

Firearm injuries are the second leading cause of death in youth aged 15 to 24, and over half of these deaths are suicides. Each year, our pediatric emergency department (PED) staff care for over 300 children and adolescents who present with suicidal ideation or self-harming behaviors. We implemented an ED-based program aimed at improving the education given to families on reducing self-directed violence and providing gun storage devices to families with the goal of reducing access to lethal means.

Methods:

Our program takes place within the pediatric emergency department of an academic children's hospital. We developed the program to assist families of patients of any age who present with suicidal ideation (SI) or suicide attempt (SA). In collaboration with our social workers, we reviewed their processes for interviewing and counseling families of patients who present with SI/SA. Social workers used a hospital-wide teaching sheet for safety planning that included information about safely storing medications as well as community mental health services. We then teamed with our hospital's health literacy and education committees and revised the teaching sheet to include discussion on safe gun storage. For families who were interested, we developed a process to provide up to two handgun lockboxes equipped with a combination lock. Working with risk management, the parent injury prevention product liability form was updated to include gun lockboxes.

Results:

Our program began in January 2020. Through April 15, 2021, we have provided 33 gun lockboxes to 19 families. The mean age of patients was 15.7 years with a range of 13 to 18 years. 58% were female. Forty-two per cent were Latino, 26% Black, 21% White, and 10% other. Chief complaint was ingestion for 37%, self-harm for 32%, gunshot wound for 11% and unknown for 21%. Social workers have noted that parents and caregivers are appreciative to receive simultaneously education on safe firearm storage and gun lockboxes at a critical time in their child's life.

Conclusions:

Implementation of the gun lockbox program including development of a teaching sheet and provision of gun lockboxes to families has been welcomed by our social work team and families receiving care in the PED. Next steps under consideration include providing lockboxes for safe medication storage along with establishing a follow-up system to assess proper use of lockboxes and family satisfaction.

Objectives:

Attendees will Learn:

1. To understand epidemiology of gun injuries in suicide.
2. To recognize considerations that should be made when developing a gun lockbox program.
3. To develop an evaluation for a gun safety program targeting suicide prevention.

Advancing the Language of HOPE (Healthy Outcomes from Positive Experiences)

Dina Burstein, MD, MPH; Chloe Yang, BS; Robert Sege, MD, PhD

Background:

Adverse Childhood Experiences (ACES) cause toxic stress and are linked to poor adult mental and physical health outcomes. In the same manner, Positive Childhood Experiences (PCES) prevent and mitigate the effects of ACES and toxic stress via biologic and physiologic changes in the brain. The Language of HOPE (Healthy Outcomes from Positive Experiences) is based on this research, offers a novel approach to trauma-informed care (TIC) and has the potential to reduce the incidence of child maltreatment. The language of HOPE is centered on 4 building blocks: relationships with adults and other children, safe, stable and equitable environments to live, learn and play, social/civic engagement and opportunities for social/emotional development. The language is intended to augment and modify approaches to TIC by a wide variety of practitioners.

Methods:

Throughout the project development year, the HOPE team travelled nationwide presenting to a variety of groups, from frontline providers to local and state level policy makers. The sessions introduced HOPE and gathered input on how to best integrate the HOPE principles into practice. Lessons learned will be incorporated into a strategic plan for full, nationwide program implementation.

Results:

During the project planning year, the HOPE team conducted 15 presentations and workshops. Audiences included the Division of Violence Prevention in the National Center for Injury Prevention and Control (NCIPC) at the Centers for Disease Control and Prevention (CDC), ACES Connection members and affiliates in northern and southern California, Prevent Child Abuse America, Healthy Families America, numerous state Children's Trust organizations and others. Participants saw value in incorporating the language of HOPE into their work and expressed a desire for accessible training as well as practitioner and client focused materials. Additionally, a 12 member National Advisory Board consisting of leaders in the fields of child abuse prevention and health equity was convened. This board provided guidance on planning year activities and strategic plan development and will continue to steer the HOPE team throughout the project. Lessons learned led to the following strategic plan goals, all of which are considered through a health equity lens: become the hub for content related to the implementing the Science and the Language of HOPE (website, social media, blogs), workforce development (online learning, presentations, workshops), organizational change (policy development and adoption), and data/evaluation (national survey, case studies, independent evaluator).

Conclusions:

The goal of HOPE is to translate current science about the development of resilience into a common language that promotes positive experiences. This represents a paradigm shift in how practitioners interact with families. HOPE has the potential to reduce ACES and toxic stress, mitigate their effects, reduce child maltreatment and improve adult mental and physical health outcomes.

Objectives:

Attendees will Learn:

1. To recognize the connection between ACES, toxic stress, PCES and physical and mental health outcomes.
2. To identify the Language and Building Blocks of HOPE.

3. To determine a new approach to TIC.

Racial and Incident Discrepancies in News Media Reporting of Sudden Unexpected Infant Death (SUID)

Sarah Gard Lazarus, DO; Terri Miller, MPH; Philip Hudson, MPH; Terri McFadden, MD; Gretchen Baas, MPH; Sadiqa Kendi, MD

Background:

Unintentional injuries are the leading cause of childhood death, and sudden unexpected infant death (SUID) is a leading cause of death in children under one year of age. There are significant disparities in mortality, with SUID rates impacting approximately twice as many Black infants as compared to non-Hispanic white infants. Due to media reports potentially serving as an opportunity for shaping social norms, caregiver education and injury prevention, an evaluation was undertaken to determine Georgia local news reporting of SUID as compared to drownings, homicides, and firearm injuries, with further analysis of any racial discrepancies in the news media reporting of these deaths.

Methods:

Data were reviewed from January 1st of 2014 to December 31st of 2018 from various news sources using a search database to determine the rate of deaths from the following injury mechanisms throughout the State of Georgia: motor vehicle crashes (MVCs), SUID, fire-related deaths, homicide and drowning under the age of 19, with further division of homicide under age one. The media reports were compared to the Georgia Online Analytical Statistical Information System (OASIS), a public health reporting database through Georgia Department of Public Health (DPH) derived from death certificate data.

Results:

Despite its high incidence, SUID was far less commonly mentioned in the media, with only 1.9% (10/525) mentioned as compared to 8.1% of drownings (17/211), 11.4% (74/649) of MVC's, 14.7% (59/402) of homicides between ages 1-18, 20% (11/55) of fire-related deaths and 25% (15/59) of homicides under age one. When compared to SUID, these other deaths were mentioned in the news media between 4 and 13 times more. Both SUID and infant homicide disproportionately affected Black infants, with 58% (297/512) of SUID deaths and 71% (41/58) of infant homicide affecting Black infants. Despite this finding, deaths of white children under the age of one were reported in the media at 2.5 times the rate of Black children under the age of one, controlling for whether they died of SUID or homicide.

Conclusions:

Despite SUID being a leading cause of infant death, it is infrequently mentioned in the media. When mentioned, the media are more likely to highlight the deaths of infants as compared to Black infants under the age of one, though the incidence rate of SUID is higher in Black infants as compared to white.

Objectives:

Attendees will Learn:

1. To evaluate the incidence of pediatric injury deaths reported in news media compared to those reported in Georgia Department of Public Health Online Analytical Statistical Information System (GDPH OASIS).
2. To assess racial discrepancies in Georgia news media reports of pediatric injury deaths.
3. To discuss opportunities for improvement in news media reporting of pediatric injury deaths.

Impact of Caregiver Swimming Capability on Perceptions of Swimming Pool Supervision

Molly Johnson, PhD; Elizabeth Boriack, MPH; Carlee McConnell, MPH; Karla Lawson, PhD, MPH

Background:

Drowning is the leading cause of unintentional injury-related death for toddlers within the U.S. The American Academy of Pediatrics recommends keeping toddlers within arm's reach while swimming, yet many caregivers do not. Possibly, caregivers' attitudes are shaped by their expectations about whether they could quickly save a child. The aim of this study is to understand whether perceptions of arm's reach supervision are impacted by the capability of the caregiver to swim the length of a standard pool.

Methods:

A survey was conducted on 650 adult caregivers of 1-4 y/o toddlers using the online Amazon MTurk platform. The survey asked about the caregiver's capability to swim 25 m, their gender, age, race, and relationship to the toddler they care for. Participants rated their agreement with ten statements about arm's reach supervision in varying scenarios, like shallow water and when a lifeguard is on duty, e.g. "Toddlers should be kept within arm's reach of their parent or caregiver even if they are playing with other toddlers." Perceptions were summed to create a perceptions score (range: 10-50). Analysis of variance was used to determine the impact of caregiver swimming capability, gender, age, race, and caregiver relationship on perceptions of arm's reach pool supervision.

Results:

Caregivers showed agreement with arm's reach supervision (mean 39.32; SD: 6.99). There was a significant effect of caregiver swimming capability on perceptions of arm's reach supervision ($p=0.0002$). Caregivers who could "definitely not" swim 25 m showed most agreement with arm's reach supervision (mean 43.89; SD 6.15), followed by those who could "easily" swim 25 m (mean 40.04; SD: 6.98). The lowest agreement was shown by caregivers who could "but it would be hard" (mean 37.82; SD 6.38) and could "probably not" swim 25 m (mean 37.29; SD 9.06). There were significant differences in perceptions based on gender ($p=0.0027$), with female caregivers showing higher agreement with arm's reach supervision (mean 40.33; SD 6.95) compared with male caregivers (mean 38.71; SD 6.95). There were also significant differences in perceptions based on the caregiver relationship ($p=0.0082$), with grandparents showing the most positive perceptions (mean 40.45; SD 5.40), followed by parents (mean 39.51; SD 7.24) and aunts/uncles/cousins (mean 38.09; SD 5.56), and the least agreement from older siblings (mean 35.50; SD 5.95). There were no significant differences in perceptions based on age ($p=0.765$) or race ($p=0.165$).

Conclusions:

Caregivers' views about what constitutes appropriate supervision is impacted by gender, the relationship to the toddler, and the caregiver's swimming capabilities, with non-swimmers and strong swimmers showing a more positive perception of arm's reach supervision than swimmers with low swimming capability. Findings suggest that a caregiver's ability to offer close supervision or respond in an emergency may influence their attitudes about what constitutes appropriate supervision.

Objectives:

Attendees will Learn:

1. To understand how caregivers of toddlers view arm's reach supervision.
2. To illustrate how attitudes about the need to keep toddlers within arm's reach at a pool are shaped by swimming capabilities, gender, and caregiver relationships.

3. To discuss how caregiver characteristics and capabilities impact injury risk.

A multi-faceted water safety campaign: How to make an impact

Sarah Lazarus, DO; Kiesha Fraser Doh, MD; Parker Lincoln, MPH; Smah Abelhamid, MPH, Michelle Walker, BSN, Marc Welsh, MPH

Background:

Drowning is the leading cause of death in children ages 1-4. Layers of protection are essential in protecting against drowning deaths. Education and outreach are important components to promote drowning prevention.

Methods:

A multi-faceted outreach program was initiated in May 2019 in partnership with a tertiary-care hospital system in Atlanta, Georgia. This program involved outreach via hospital website, electronic communications, strategic partnerships, radio, digital advertising and public relations. Paid digital advertising via content discovery was provided from May 6th to September 8th of 2019. The campaign included a digital video, digital billboards, escalator clings in shopping malls, radio spots and pop-ups delivered via the Waze application when the driver was close to a body of water. Digital toolkits were formatted for healthcare providers and school-based clinics received e-blasts. In partnership with the YMCA, swim education was provided.

Results:

The outreach campaign made 46 million impressions. Digital video received 1.8 million completed views, billboards provided 46.4 million impressions, escalator clings delivered 4.2 million impressions and radio spots provided 182,000 impressions. The hospital water safety website received 111,488 visits. A digital toolkit was sent to 1,311 providers and a school health e-blast sent to over 1,600 school nurses and clinic assistants. The digital toolkit was distributed to over 3,000 providers, physicians and clinics. In addition, in partnership with YMCA, 1797 children receiving land-based education, 431 children receiving water-based education, 48 teenagers receiving swim lessons, 360 free swim lesson vouchers given and 359 parents receiving water safety and drowning education. Comparing 2019 and 2020, although results may be confounded by the COVID-19 pandemic, there was a significant decrease in the incidence of drowning when comparing May through September of 2019 (82 patients) vs. May through September of 2020 (31 patients), with a p value of <0.01. When reviewing cases by month comparing 2019 to 2020, there was an 86% decrease in drowning presentations in May, a 33% decrease in June, a 47% decrease in July and a 73% decrease in August. Interestingly, in September, there were the same number of cases between 2019 and 2020.

Conclusions:

A multi-faceted outreach program can generate a large impact. Billboards, digital videos and escalator clings generated the largest number of impressions and majority of parents were able to correct identify drowning messaging during the campaign. Future campaigns should focus on how to impact the degradation in knowledge between swim seasons or employ annual sustained educational campaigns regarding swim safety.

Objectives:

Attendees will Learn:

1. To recognize how a drowning campaign generated a large impact in a metropolitan city.
2. To discuss various media outlets utilized during a drowning campaign and evaluation techniques.
3. To identify ways to develop an effective drowning prevention campaign.

Common Sports Injuries in Children Presenting to Emergency Department

John Nichols, BS; Annalise Sorrentino, MD; Nipam Shah, MBBS, MPH; Kathy Monroe, MD, MSQI

Background:

Participation in sports is popular among children and a common cause of pediatric injury. Understanding the epidemiology and trends of sports related injuries is an important component of injury prevention efforts.

Methods:

A retrospective review of sports injuries presenting over one year (2019) to an emergency department (ED) of a large academic children's hospital was performed. Inclusion criteria focused on patients ≤ 18 years whose ED visit resulted from active participation in a sport. Cases were identified using ICD-10 codes. Demographic data was collected on these patients and included gender, age, race, injury specifics. Descriptive statistics were performed, and categorical variables were analyzed using chi-square test.

Results:

A total of 1333 sports injuries were identified with the most common being football (43%); basketball (36%); soccer (11%), baseball (8%). The median age was 13 years (IQR: 4 years), 428 (32%) < 12 years and 905 (68%) ≥ 12 years; 1143 (86 %) were males and 835 (63%) were black. School was the most common location for sports injuries (28%). When comparing injuries by age groups (≤ 12 vs. ≥ 12), baseball and football injuries were more common in those < 12 years (14% vs. 6% and 53% vs. 38% respectively) whereas basketball and soccer injuries were more common in those ≥ 12 (43% vs 22% and 11% vs 9% respectively); $p < 0.001$. When comparing injuries by gender, baseball and football injuries were more common in males (9% vs. 2% and 49% vs. 6% respectively) whereas basketball and soccer injuries were more common in females (59% vs 32% and 27% vs 8% respectively); $p < 0.001$

Conclusions:

Sports injuries that are commonly encountered in the emergency department differ in age and gender. Basketball and soccer injuries were more likely to be encountered in older females, while baseball and football injuries were more likely seen in younger males. This information can help guide future preventative efforts provided by primary physicians, schools, and coaches.

Objectives:

Attendees will Learn:

1. To identify which are the most common sports related injuries seen in pediatrics.
2. To determine gender differences in sports related injuries.
3. To describe age differences in sports related injuries.

Pediatric Firearm Assaults – A National Analysis

Max Hazeltine, MD; Robert McLoughlin MD, MSCI; Julia Sherman, BS; Symren Dhaliwal, BS; Muriel Cleary, MD; Jeremy Aidlen, MD; Michael Hirsh, MD

Background:

Firearm assaults are a public health crisis in the pediatric population. Firearm assaults result in a disproportionate number of injury-related deaths. The study objectives were to describe demographic characteristics of pediatric firearm assaults, examine injuries and hospital course.

Methods:

We performed a cross-sectional analysis of the 2016 Kids' Inpatient Database. We identified cases of firearm assault using external cause of injury codes. The comparison group was age matched patients admitted for other traumatic injuries. Patient characteristics were analyzed using ICD-10 codes. Multivariable logistic regression was performed to adjust for confounders.

Results:

We identified 4,134 firearm assault cases and 159,630 admissions for other traumatic injuries with a mean age of 18.0 and 16.6, respectively ($p < 0.01$). Patients admitted for a firearm assault were predominately male (89.3% vs 56.6%, $p < 0.01$), African American (60.7% vs 15.5%, $p < 0.01$), from the lowest income quartile (56.8% vs 29.4%, $p < 0.01$), resided in urban areas (73.0% vs 54.8%, $p < 0.01$), and had a diagnosis of substance use disorder (28.2% vs 18.3%, $p < 0.01$). Firearm assault admissions more often occurred on weekends (33.6% vs 26.3%, $p < 0.01$), more often required ICU admission (16.0% vs 8.1%, $p < 0.01$), and had a longer length of stay (LOS) (7.9 vs 5.7 days, $p < 0.01$). Firearm assaults had higher rates of major surgical procedures (78.8% vs 50.3%, $p < 0.01$) and in-hospital mortality (3.7% vs 1.1%, $p < 0.01$).

Multivariable logistic regression assessing the odds of admission for firearm assault demonstrated that those age 14 to 18 years had 10.2 times higher odds ($p < 0.01$), and those age 19 to 20 years had 14.7 times higher odds ($p < 0.01$) compared to those age 12 to 13 years. Males had 5.8 times higher odds ($p < 0.01$) compared to females, and African Americans had 10.8 times higher odds ($p < 0.01$) compared to non-Hispanic whites. Patients in the highest income quartile had lower odds compared to the lowest income quartile (OR 0.3, $p < 0.01$), and those in rural areas had lower odds compared to urban patients (OR 0.2, $p < 0.01$). Patients with a comorbid substance use disorder had 1.3 higher odds of firearm assault compared to those without a substance use disorder diagnosis ($p < 0.01$).

Conclusions:

This study found that African Americans, males, those in urban areas and in the lowest income quartile had the greatest odds of being admitted for a firearm assault. Compared to other trauma admissions, firearm assaults had higher rates of ICU admission, major surgical procedures, and mortality. These data help identify those with highest odds of firearm assault. Public health interventions targeting those at risk may decrease injury from firearm assault.

Objectives:

Attendees will Learn:

1. To recognize firearm assaults disproportionately affect particular ages, ethnic and socioeconomic groups.
2. To describe the increase in the odds of firearm assault admission with comorbid substance use disorder.

3. To understand firearm assaults lead to severe injuries with significant morbidity and mortality.

Parental Attitudes, Beliefs, and Practices Related to Firearm Storage: A Qualitative Study

Christopher Schenck, BS; Meghan Wilson, MD, MPH; Gunjan Tiyyagura, MD, MHS; Kirsten Bechtel, MD

Background:

Firearm injury is a leading cause of death among U.S. children. Almost half of firearm deaths among children are suicides or unintentional injuries. The practices of storing firearms locked, unloaded, and keeping ammunition locked and separate from firearms are associated with reduced odds of childhood firearm injury. However, many households do not implement these practices. We sought to characterize parental attitudes and beliefs related to firearm storage and identify facilitators and barriers to safer firearm storage.

Methods:

Eligible participants were the parents or guardians of a child less than 18 years old with whom they shared a home and kept at least one firearm. Participants were recruited from three general pediatrics clinics and a pediatric emergency department in a Northeastern county with both rural and urban areas between August 2019 and November 2020. Semi-structured, qualitative interviews were conducted to identify reasons for using different firearm storage methods and strategies to prevent firearm injury. Interview transcripts were independently reviewed, and descriptive codes were assigned. The constant comparative method was used to revise and categorize codes iteratively. Themes were derived and revised as data collection occurred. Data collection concluded once thematic saturation was achieved.

Results:

We completed semi-structured interviews with 20 participants. Participants were majority male (60%), white (90%), and aged 32 to 53. Children present in the home had a mean age of 8 years. 85% of participants stored firearms locked, 60% stored firearms unloaded, 65% kept ammunition locked or did not keep ammunition, and 45% stored ammunition separate from firearms. The following themes were identified: 1) firearm storage must be compatible with a specific context of use; 2) firearm storage is often 'safe enough,' and not necessarily maximally safe; 3) firearm practices are influenced by one's social network and lived experience; 4) parents who own firearms may be open to changing storage practices; 5) firearm safety may require a multimodal approach, involving storage, education, and legislation.

Conclusions:

Parents who keep firearms value convenience and utility, which may be at odds with safer storage practices. However, some parents may be open to adopting safer practices. Family and peer relationships, education, and legislation represent important facilitators of firearm storage practices. Understanding parental attitudes and beliefs related to firearm storage may inform future interventions to improve storage practices.

Objectives:

Attendees will Learn:

1. To recognize the manner of firearm use may influence parental storage practices.
2. To describe how one's life experience and close contacts guide storage decisions.
3. To understand parents who keep firearms may be open to adopting safer storage practices.

Racial and Ethnic Disparities in Pediatric Unintentional Injuries Requiring Hospitalization

Kristyn Jeffries, MD; Matthew Hall, PhD; Denise Dowd, MD, MPH; Jessica Bettenhausen, MD; Jessica Markham, MD; David Synhorst, MD; Henry Puls, MD

Background:

Unintentional injuries are the most common cause of death among children 1-19 years of age. Compared to White children, Black children have a higher fatality rate from many unintentional injury mechanisms across all age groups. Nonfatal injuries requiring hospitalization can cause additional burden due to significant medical costs and may disproportionately affect minority children. A comprehensive evaluation of these disparities can enrich our understanding of the breadth of these nonfatal injuries and allow more focused prevention efforts within these higher-risk populations. Our primary objective was to examine racial and ethnic disparities in pediatric unintentional injuries requiring hospitalization stratified by injury mechanism. Secondly, we examined these disparities additionally stratified by age.

Methods:

This retrospective cross-sectional study used the 2016 Kids' Inpatient Database and data from the Integrated Public Use Microdata Series (IPUMS) of the U.S. Census. Unintentional injury hospitalizations for children 1-19 years of age were identified using the CDC's ICD-10 cause-of-injury coding scheme, which were then stratified by race and ethnicity: non-Hispanic Black, non-Hispanic White, Hispanic, and all other races. Infants < 1 year of age were excluded due to the predominance of alternate methods of unintentional injuries in this age group. Hospitalization rates were calculated per 100,000 children with 95% confidence intervals (CI). Relative risk ratios (RR) compared injury hospitalizations by race and ethnicity, with White children as the referent. We also calculated the absolute number of injuries that could be attributed to disparities for each mechanism and race/ethnicity group.

Results:

There were 94,201 hospitalizations for pediatric unintentional injuries in 2016. The greatest racial and ethnic disparities were observed between Black and white children for all injury mechanisms except falls. The largest Black-white disparities overall were for unintentional firearm injuries (RR 9.82 [95% CI: 10.18, 9.48]) and pedestrians injured by motor vehicles (RR 2.38 [95% CI: 2.35, 2.41]; $p < 0.001$ in both cases). The trends of disparities across age strata varied by injury mechanism, most notably for firearms, MVC-pedestrian, burns and drownings. Of all the unintentional injuries requiring hospitalization among racial and ethnic minority children, 26.3%, 4.8%, and 5.8% were attributable to disparities among Black, Hispanic, and other minority children, respectively. These disparities accounted for 5,332 excessive hospitalizations among minority children compared to white children.

Conclusions:

The risk for unintentional injuries requiring hospitalization was disproportionately higher for Black children compared to white children, particularly for certain injury mechanisms. Understanding how these hospitalizations for unintentional injuries contribute to health disparities is important for pediatric injury prevention advocates. Targeted policies and programming to prevent these nonfatal injuries would help reduce the additional burden placed on minority populations.

Objectives:

Attendees will Learn:

1. To recognize minority children, most notably Black children, have a disproportionate increased risk for unintentional injury hospitalization.
2. To discuss how disparities vary by injury mechanism across age strata.
3. To demonstrate how about 25% of the hospitalizations among Black children were attributable to disparities.

Obtaining Corporate Partnerships to Expand an Injury Prevention Program's Community Reach

Barbara DiGirolamo, MEd, CPST-I; Deirdre Walsh, BA; Maria McMahon, MSN, PNP-PC/AC, CPST, TCRN

Background:

As a Level I Pediatric Trauma Center, we are not only obligated to provide injury prevention initiatives, programming and resources, but it is one of our hospital's missions. Our program was established to improve the safety of children through education, research, and advocacy. To achieve a higher level of social and community accountability to fully meet the needs of our most vulnerable populations, we have developed a systematic approach to develop corporate partnerships to support our programs. The objective of this program evaluation is to describe the results of program expansion after collaboration with corporate partners.

Methods:

Funding for our Injury Prevention (IP) Program is from our hospital, outside grants, and donations from fundraising events. The Children's Hospital Trust is the philanthropic resource authorized to raise money for our hospital and manage corporate partnerships. Our IP Program developed a systematic approach with the Trust to showcase our program accomplishments and develop proposals for review by foundations or corporations who align with our mission to prevent childhood injury. This included working with the Trust who identifies programs meeting donors' interests and facilitates relationship development between the donating organization/foundation and the awarded program.

Results:

Over the last five years we have obtained three partnerships with funding from outside corporations. With the increased funding from these corporate partnerships, we have been able to purchase more car seats, helmets and other safety materials, as well as increase our programming. We have purchased an injury prevention van and have created new marketing and educational materials. This funding has also allowed us to add a third injury prevention staff member to our team. Most recently we have created a tool kit for our home safety and shelter programs. Once completed, these program materials and resources will be shared and accessible from a sponsored site, nationally. These generous partnerships have allowed our reach in the community to grow substantially. (See Chart)

| Expansion of Injury Prevention Programs and Deliverables | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|
| Venues | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
| Health Centers/ | | | | | | | |
| Headstart | 6 | 32 | 33 | 27 | 29 | 30 | 54 |
| Schools | 10 | 6 | 11 | 46 | 45 | 15 | 20 |
| Community Health/ | | | | | | | |
| Safety Fairs | 6 | 5 | 20 | 47 | 38 | 25 | 28 |
| Other Outreach/ | | | | | | | |
| Customized Events/ | | | | | | | |
| Shelters | 3 | 14 | 29 | 38 | 40 | 10 | 20 |
| Deliverables | | | | | | | |
| Helmets* | 892 | 500 | 503 | 650 | 2,100 | 1,173 | 2,967 |
| Car Seats* | 306 | 447 | 905 | 644 | 646 | 263 | 383 |
| ThinkFirst | 845 | 1,000 | 1,787 | 5,142 | 7,034 | 250 | 2,100 |
| *Inpatient, Community Events & Health Fairs | | | | | | | |
| | Chart | | | | | | |

Conclusions:

Our injury prevention efforts are integral to our hospital's mission. Our proactive approach includes educating and equipping patients and families with needed safety materials, providing information and training when needed to providers, and complementing the work of community organizations. Using a systematic methodology, we have acquired 3 important corporate partnerships to increase funding for the IP program. With this funding we have been able to increase our programming, deliverables, and geographic reach. As a result, we have greatly expanded our outreach to families and community providers both in our city as well as across the state.

Objectives:

Attendees will Learn:

1. To utilize Hospital Trusts or Corporate Gifts Departments to assist in obtaining financial support for programs.
2. To understand strategies to entice corporate partnerships.
3. To demonstrate ways to expand a program once a partnership is established.

Measuring the Effectiveness of a Car Seat Program in an Urban, Level One Pediatric Trauma Center

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Background:

According to the Centers for Disease Control and Prevention (CDC), motor vehicle collisions (MVCs) are responsible for 675 deaths and 166,000 injuries for children under 12 years of age annually. While MVCs are the leading cause of death for children, choosing the appropriate seat, proper usage, and correct installation of car seats can reduce serious and fatal injuries. Knowledge and accessibility to car seats can be challenging for individuals residing in lower socioeconomic areas. In urban areas, caregivers are 30% more likely to not use car seats and it is reported that 72% of car seats are not being used correctly. The current car seat program was designed to provide car seats to caregivers of children living in the surrounding communities and current patients of the Level 1 Pediatric Trauma Facility.

Methods:

Child Passenger Safety Technicians (CPSTs; N = 2) facilitated the program. The CPSTs and a research coordinator created a pre- and post-survey to assess caregivers' knowledge of car seat safety prior to the one hour individual or group educational workshop. The knowledge assessment survey measured understanding of (1) height/weight requirements, (2) rear and forward-facing laws, (3) harness location, (4) appropriate fitting, (5) coats in car seats, and (6) installation. During the educational component consisting of lecture material and teach-back methods, the caregivers completed the questionnaire again. Knowledge of this information was assessed using paired t-tests and calculating effect sizes. Following completion of the session and post-survey, caregivers were provided with the appropriate seat (funded by either the PA Traffic Injury Prevention Project or Buckle Up for Life) and installation of seat(s) for their child(ren).

Results:

Two hundred participants from the surrounding communities received a car seat(s) between March 2017 and June 2019. Results displayed that the education on car seats increased the caregiver's knowledge in all aspects significantly ($p < 0.001$). Specifically, caregivers' knowledge of the 8 year-old requirement for car seat usage increased from 25.5% to 73.5% after the educational session: $t(199) = 11.62$, $p < 0.001$, $d = 0.89$. Caregiver knowledge of rear-facing car-seats for all children until two years of age increased from 30.5% to 62.5% ($t(199) = 7.07$, $p < 0.001$, $d = 0.68$). Awareness of the dangers of wearing coats increased significantly from 63.5% to 87% ($t(199) = 6.27$, $p < 0.001$, $d = 0.50$). Proper fitting and tightness knowledge of car seats increased significantly from 46.5% to 72.5% ($t(199) = 4.2$, $p < 0.001$, $d = 0.30$) after the survey. Medium to large effect sizes display the magnitude of these percentile changes.

Conclusions:

Hospitals in urban environments can positively impact the knowledge of caregivers by implementing car seat education and installation forums with a CPST. The results of this program display an increase in caregiver knowledge through the use of a one-hour, hands-on educational course. Future work should explore how to appropriately facilitate these sessions virtually as funding is often difficult to sustain. Car seat programs are critical to the prevention of motor vehicle related collisions due to improper fitting and car seat use.

Objectives:**Attendees will Learn:**

1. To determine how to increase caregiver (and practitioner) knowledge about choosing and installing the appropriate child restraint system for their child(ren).
2. To evaluate the efficacy of a hospital car seat program.
3. To develop strategies to increase caregiver knowledge of how to use the restraint system properly for a child's safety.

Car Safety of Preterm and Low Birth Weight Infants at Hospital Discharge. Are We Doing the Job?

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Background:

Improved survival rates and earlier discharge of preterm and low birth weight infants have increased the number of small infants who are being transported in vehicles. Child safety seats that are used correctly are 71-82% effective in preventing fatalities. To ensure that preterm and low birth weight infants are transported safely, a pre-discharge car seat tolerance test (CST) is currently recommended for all infants born prematurely to monitor for adverse cardiorespiratory events while in the semi-upright car seat. Objectives:

Estimate prevalence of child safety seat misuses for infants discharged from the Neonatal Intensive Care Unit (NICU); identify potential risks and protective factors for misuses.

Methods:

We randomly sampled infants who underwent CST test in the Level IV NICU of an academic health center. Infants were placed in the child safety seats by the neonatal nurses. Certified car seat technicians evaluated infant's positioning including the use of harness strapping, buckles, and retainer clips, as well as the use of extra positioning devices in accordance with the National Highway Traffic Safety Administration recommendations. Neonatal nurses were asked to complete a survey regarding their training and comfort level performing CST tests.

Results:

A total of 20 infant CSTs were observed from October 2019 to June 2020. 65% of CSTs were misused, with 1 or more errors in positioning and/or use of extra positioning devices. Frequent misuses included straps being too loose and not providing secure positioning (60%) and harness, chest, or crotch clips errors (30%). 91 out of 250 (36%) nurses responded to nursing survey via SurveyMonkey. 58.2% of nurses admitted to never receiving training or education on child passenger safety; 70% of nurses responded that they feel comfortable performing CST test.

Conclusions:

Despite high rate of car seat misuses, the majority of neonatal nurses responded that they feel comfortable placing an infant appropriately in the car safety seat which poses significant risk of modeling wrong practices to the parents and exposing infants to safety risk. Resources and training should be devoted to ensuring medical providers and caretakers in the neonatal units with appropriate education on child seat safety prior to the hospital discharge.

Objectives:

Attendees will Learn:

1. To assess child safety seat misuses.
2. To determine potential risks and protective factors for misuses.
3. To recognize the need for appropriate staff and parental education on child seat safety prior to hospital discharge.