Evidence-based and Promising Interventions for Preventing Child Fatalities and Severe Child Injuries Related to Child Maltreatment

AUTHOR AND AFFILIATIONS

Peter J. Pecora, Ph.D.
Managing Director of Research Services, Casey Family Programs
Professor, School of Social Work, University of Washington

April 2017

Upbring®

Executive Summary

Though well-intentioned, current child welfare services may be failing to protect children from severe maltreatment due to constraints in policy, program design, practice and funding. Drawing from advances in the injury control field and other areas, this document summarizes the community conditions, systems factors, evidence-based practices (EBPs), and promising practices that may prevent child fatalities and severe child injuries related to child maltreatment. It also outlines future directions for practice and research.

Scope of Child Fatalities and Context

While much less frequent than the total number of child welfare reports investigated by Child Protective Services (CPS), severe child injuries and child fatalities are the most tragic consequences of maltreatment. For Federal Fiscal Year 2015, a total of 49 states reported 1,585 child fatalities (nationally estimated at 1,670 or 2.25 per 100,000 children) stemming from abuse or neglect.

This situation is exacerbated by the fact that compared to victim treatment, relatively few strategies have been developed and evaluated to **prevent** child fatalities and severe injuries related to child maltreatment. Yet there are efforts underway to help reduce infant mortalities and child injuries across a range of other sectors, including injury control in public health (formerly known as accident prevention) (Rivara & Grossman, 2015, p. 1-41 to 1-47). (See, for example, Delaware's and Michigan's efforts to reduce infant mortality rates: http://dhss.delaware.gov/dph/files/infantmortalityreport.pdf and http://www.michigan.gov/infantmortality/0,5312,7-306-64191-296542--,00.html)

This document briefly summarizes the evidence-based practices (EBPs) and promising practices that have been found to prevent child fatalities and severe child injuries related to child maltreatment. It also outlines future directions for practice and research.

Analyses conducted by the United States Administration for Children, Youth and Families on the child fatalities for whom case-level data were obtained found that:

- Three-quarters (74.8%) of all child fatalities were younger than 3 years, and the child fatality rates mostly decreased with age.
- Children who were younger than 1 year died from maltreatment at a rate of 20.91 per 100,000 children. This is 3 times the fatality rate for children who were 1 year old (6.38 per 100,000 children in the population of the same age). Younger children are the most vulnerable to death as a result of child abuse and neglect. This fact is somewhat masked by the all-ages national rate.
- Boys had a higher child fatality rate than girls: 2.42 per 100,000 boys in the population, compared with 2.09 per 100,000 girls in the population.
- The largest ethnic groups represented in child fatality victims were of White (42.3%), African-American (30.6%), and Hispanic (14.5%) descent.
- Of the children who died, 72.9% suffered neglect, and 43.9% suffered physical abuse – either exclusively or in combination with another maltreatment type. (Because a victim may have suffered from more than one type of maltreatment, every reported maltreatment type was counted, and the percentages total more than one hundred percent.)
- More than three-quarters (77.7%) of child fatalities involved parents acting alone, together, or with other individuals. Nearly one-fifth (18.7%) of the children killed did not have a parental relationship to their perpetrator. Child fatalities with unknown perpetrator relationship data accounted for 3.6% (U.S. Department of Health and Human Services, 2016, pp. 52-55).

Based on recent research, including key findings from the National Commission to Eliminate Child Abuse and Neglect Fatalities and the NSCAW I and II studies, it appears that despite positive intentions, current child welfare services may be failing to protect many of the 3 million children at risk of child maltreatment in the United States due to constraints in policy, program design, practice and funding (Commission to Eliminate Child Abuse and Neglect Fatalities, 2016; Miyamoto et al., 2016; Putnam–Hornstein, Cleves, Licht & Needell, 2013). These children who are at risk have not received effective prevention services. While child fatality reviews have been conducted and there has been a slightly increased use of multi-

sector data to identify families most at risk, relatively little research exists with regard to understanding the services that families receive prior to a maltreatment fatality, as discussed by Douglas (2016, p. 240):

> A descriptive study which asked child welfare workers to recount the services that families received prior to a fatality showed that never more than one third of families were receiving services (Douglas, 2013). About one third of families completed parenting education and were receiving counseling or psychotherapy. A much smaller percentage, 14%, were receiving in-home services when the child died. Further 40% indicated that even though the parents were referred for services, they were not using them regularly.

Even children placed in foster homes and group care are not immune to this risk. Studies have found that child maltreatment occurring in foster care is 2 to 3 times the frequency of that in the general population. (See, for example, New York State Department of Social Services report to the Governor and the Legislature on Child Protective Services, 1980; Rindfleisch & Rabb, 1984; Uliando & Mellor, 2012). However, Douglas (2016) found that case management services, family support services and foster care were associated with fewer child fatalities.

Lessons from the Injury Control Field

While addressing a broader set of circumstances other than maltreatment that put children at risk, there are many insights and strategies that we can learn from the injury control experts in public health and medicine:

> Injuries have defined risk and protective factors that can be used to define prevention strategies. The term accidents implies an event occurring by chance, without pattern or predictability. In fact, most injuries occur under fairly predictable circumstances to high-risk children and families. Most injuries are preventable. The reduction of morbidity and mortality from injuries can be accomplished not only through primary prevention (averting the event or injury in the 1st place), but also through secondary and tertiary prevention (Rivara, & Grossman, 2015, p.1.41).

The professionals in this specialty field of injury control strive to reduce unnecessary child and adolescent fatalities because in the United States, injuries cause 41% of deaths among children between 1 and 4 years old and 3.5 times more deaths than the next leading cause, congenital anomalies (Rivara and Grossman, 2015). For the rest of childhood and adolescence up to the age of 19 years, 63% of deaths are a result of injuries, more than all other causes combined. In 2010, injuries caused 13,819 deaths (16 deaths per 100,000) among individuals 19 years old and younger in the United States, resulting in more years of potential life lost than any other cause. These include motor vehicle injuries, drowning, fire and burn deaths, and suffocation.

But homicide is the third leading cause of injury death in children 1-4 years of age and the second leading cause of injury death in adolescents (15-19 years old). Homicide among children typically follows two patterns: infantile and adolescent. Infantile homicide involves children younger than age 5 years stemming primarily from physical abuse. The perpetrator is usually a caretaker; death is generally the result of blunt trauma to the head and/or abdomen. The adolescent pattern of homicide involves peers and acquaintances, and is caused by firearms (mostly handguns) in 85% of cases. Children between these two age groups experience homicides of both types more equally.[2]

[2]Statistics for this section are abstracted from Rivara & Grossman, 2015, pp.1-41 and the source for these injury data is the Centers for Disease Control and Prevention: Web-based Injury Statistics Query and Reporting System (WISQARS) website, and the data are produced by the National Center for Injury Prevention and Control. All cause data are from the Centers for Disease Control and Prevention (2013), and these data were compiled from the Compressed Mortality File 1999-2010 (Series 20 No. 2P, 2013; http://wonder.cdc.gov/cmf-icd10.html).

Careful thinking has been invested to identify the risk factors that may be linked with specific kinds of injuries and what might be done to prevent them apart from general safety campaigns, which have been found to be promising, but overall less powerful:

> Efforts to control injuries include education or persuasion, changes in product design, and modification of the social and physical environment. Efforts to persuade individuals, particularly parents, to change their behaviors have constituted the greater part of injury control efforts. Speaking with parents specifically about using child car-seat restraints and bicycle helmets, installing smoke detectors, and checking the tap water temperature is likely to be more successful than offering well-meaning but too-general advice about supervising the child closely, being careful, and "childproofing" the home. This information should be geared to the developmental stage of the child and presented in moderate doses in the form of anticipatory guidance at well-child visits...
>
> The most successful injury-prevention strategies generally are those involving changes in product design. These passive interventions protect all individuals in the population, regardless of cooperation or level of skill, and are likely to be more successful than active measures that require repeated behavior change by the parent or child. For some types of injuries, effective passive interventions are not available or feasible; we must rely heavily on attempts to change the behavior of individuals. The most important and effective product changes have been in motor vehicles. Turning down the water heater temperature, installing smoke detectors, and using child-resistant caps on medicines and household products are other examples of effective product modifications. Many interventions require both active and passive measures. Smoke detectors provide passive protection when fully functional, but behavior change is required to ensure periodic battery changes and proper testing.
>
> Modification of the environment often requires greater changes than individual product modification, but may be very effective in reducing injuries. Safe roadway design, decreased traffic volume and speed limits in neighborhoods, and elimination of guns from households are examples of such interventions. Included in this concept are changes in the social environment through legislation, such as laws mandating child seat restraint and seatbelt use, bicycle helmet use, and graduated driver licensing laws. Prevention campaigns combining 2 or more of these approaches have been particularly effective in reducing injuries (Rivara & Grossman, 2015, pp.1.41-1.42).

In child welfare, some of the relevant strategies include specific advice on alternative discipline options other than spanking and the use of safe sleep-baby boxes, in addition to the strategies reviewed in a later section of this paper.

Surveillance and Assessment

As the federal commission and others (e.g., Smith et al, 2013) have documented, one of the key areas of work involves using more consistent definitions, measures, monitoring, and case review procedures of child deaths and near deaths – "surveillance" – across states. Vital records data such as child birth certificates, law enforcement (911 and domestic violence calls), hospital emergency room visits, public health data (such as the Women and Infants Care program - WIC), and other data could be more readily merged to learn more about key risk factors. For example, Cook Children's Medical Center in Fort Worth is working on a records merging project with the University of Texas and the Texas Advanced Computing Center. While breakthroughs are being made in using cross-sector data to identify children most at risk, limitations in policy and practice retard improvement (Barth, Putnam-Hornstein, Shaw & Dickinson, 2016, p. 5):

Covington and Petit (2013) identified some of the factors that continue to plague child welfare services. These factors include failure to properly assess the well-being of children in the home and to recognize imminent danger, failure to complete safety and risk assessments correctly or at all, failure to remove children subsequently born into a household after the death of a child or after the parent's custodial rights to another child have been terminated, failure to address the mental health needs of parents, and failure to recognize and respond to parents' clear, repeated indications that they do not want their children. Policies that largely fail to follow up with mothers who have previously shown dangerous parenting—mothers whose parental rights to another child have been previously terminated—create an unnecessary risk for children (Shaw, Barth, Mattingly, Ayer, & Berry, 2013). Assessment tools may aid workers in ascertaining the potential for a child to be harmed in the future. The failure to properly invest in and rigorously test such tools also contributes to risk.

Interventions that Have Been Found to Prevent Child Fatalities and Severe Child Injuries

Evidence-based and promising practices that have been found to prevent child fatalities and severe child injuries are summarized in Table 1. The level of research support for each intervention is indicated by asterisks. The number of asterisks indicates how strong the evidence base is for the strategy according to the California Evidence-Based Clearinghouse for Child Welfare (see Table 1 footnote). For example, the Positive Parenting Program (Triple P) is one of the few programs that found positive outcomes in parent and child behavior, and that reduces the likelihood of physical abuse (Poole, Seal, & Taylor, 2014). One of the strongest studies of Triple P was a population-based study that provided parenting education at all levels of prevention to a random selection of 18 counties (Prinz, Sanders, Shapiro, Whitaker, & Lutzker, 2009). The research team found 340 fewer cases of substantiated child maltreatment, 240 fewer foster care placements, and 60 fewer injuries caused by child maltreatment, as determined by hospitals and emergency rooms – as compared with the counties without the intervention.

Table 1. Strategies to Prevent Child Fatalities and Severe Child Injuries

Child Fatalities:

PROBLEM AREA	INTERVENTIONS LISTED BY LEVEL OF EVIDENCE WITH WEBSITES	
Physical abuse-related deaths	**SUPPORTED AND WELL-SUPPORTED:**	
	*Nurse Family Partnership**** (Nurses work with first-time parents at risk of child maltreatment or other child injuries or poor health.)	http://www.nursefamilypartnership.org For data about prevention of child fatalities, see Olds et al. (2014)
Sudden Infant Death Syndrome (SIDS) from using a non-supine infant sleeping position	**SUPPORTED AND WELL-SUPPORTED:**	
	*Back to Sleep Campaign*** (Promotion of supine sleeping position.)	http://www.nichd.nih.gov/sts/Pages/default.aspx http://safesleepforbaby.com
	PROMISING:	
	Safe Sleep Campaign in Michigan* Safe sleep cardboard baby boxes as cribs (Minneapolis, New Jersey and Ohio, Phoenix, San Francisco)	http://www.michigan.gov/dhs/0,4562,7-124-5453_7124_57836---,00.html http://www.babyboxco.com
	PROMISING:	
Infant death due to co-sleeping with adults a	*Safe Sleep* Campaign in Michigan* *U.S. Consumer Product Safety Commission (CPSC) campaign.** (The CPSC warns parents not to place their infants to sleep in adult beds, stating that the practice puts babies at risk of suffocation and strangulation.)	http://www.michigan.gov/dhs/0,4562,7-124-5453_7124_57836-165976--,00.html http://www.cpsc.gov/en/Newsroom/News-Releases/1999/CPSC-Warns-Against-Placing-Babies-in-Adult-Beds-Study-finds-64-deaths-each-year-from-suffocation-and-strangulation
	PROMISING:	
Deaths caused by poor supervision of the child (e.g., children falling out of windows, being left in an over-heated car, wandering out into a street and being hit by a car)	*Child safety campaigns that relate to multiple facets of life, including traffic safety, swimming, and sports.**	http://www.safekids.org/keeping-all-kids-safe

Severe Child Injuries: (These could also contribute to a child's death)

PROBLEM AREA	INTERVENTIONS LISTED BY LEVEL OF EVIDENCE WITH WEBSITES	
Physical abuse: Abusive head injuries such as shaken baby syndrome	**SUPPORTED AND WELL-SUPPORTED:**	
	*Healthy Start Program, Enhanced Model*** (Home-based services bolstered with a cognitive behavioral treatment component)[c]	http://www.nationalhealthystart.org
Sudden Infant Death Syndrome (SIDS) from using a non-supine infant sleeping position	**PROMISING:**	
	*Hospital-based education programs.** (The most widely adopted prevention strategy in U.S. hospitals aims to prevent abusive head trauma – aka: shaken baby or shaken impact syndrome through educational interventions about the dangers of infant shaking and ways to handle persistent crying. Leaflets, videos, and posters were provided to parents.)	http://dontshake.org http://www.kaleidahealth.org/services/pdfs/wchob/shakenbaby/Shaken_Baby_poster.pdf http://www.fussybabynetworkcolorado.org/index.htm
	*Fussy Baby Network® Colorado**	
	*Kohl's Shaken Baby Syndrome Prevention Campaign** (Began in 2006 as a joint effort between Kohls and the Children's Hospital Colorado.)	http://www.childrenscolorado.org/wellness-safety/calm-a-crying-baby
	*The Period of PURPLE Crying® education campaigns** [b]	http://www.purplecrying.info
Physical Abuse: Undifferentiated abuse that required hospitalization	**SUPPORTED AND WELL-SUPPORTED:**	
	*Nurse Family Partnership**** (emergency room visits for childhood injuries)	http://www.nursefamilypartnership.org
	*Triple P—Positive Parenting Program****	http://www.triplep.net/glo-en/home
Child injuries caused by poor supervision of the child (children falling out of windows, being left in over-heated cars, children wandering out into the street)	**PROMISING:**	
	*Child safety campaigns that relate to multiple facets of life, including traffic safety, swimming, and sports.**	http://www.safekids.org/keeping-all-kids-safe
Neglect: Severe child injury due to poor medical care or lack of proper health care	**PROMISING:**	
	*Safe Environment for Every Kid (SEEK) Project.** (Enhanced pediatric care for families at risk)	http://www.umm.edu/pediatrics/seek_project.htm

Level of evidence: *Promising Research Evidence; **Supported by Research Evidence; and ***Well-Supported by Research Evidence.

[a] While there have been campaigns to help reduce co-sleeping, we could not locate any well-researched specific evidence-based practices.

[b] The Period of PURPLE Crying® is the phrase used to describe the time in a baby's life when they cry more than any other time.

[c] The Healthy Start program emphasizes, among other things, community commitment and involvement; personal responsibility demonstrated by expectant parents; integration of health and social services; increased access to care; and public education. Program staff provide adequate prenatal care; promote positive prenatal health behaviors; help parents meet basic health needs (nutrition, housing, psychosocial support); reduce barriers to access; and promote client empowerment. There have been some concerns about how effective the core Healthy Start program model is, and at least one research study has demonstrated the added value of an enhanced model that uses a cognitive behavioral home-based coaching component (Bugental, Ellerson, Lin, Rainey, Kokotovic & N. O'Hara, 2002; Chaffin, 2004). In this study, the cognitive appraisal component was designed to enhance parents' perceptions of power or competence within the relationship, and to improve implementation of the model.

Other Interventions to Consider for Which Rigorous Child Fatality and Injury Data Do Not Yet Appear to be Available

Promising strategies that lack adequate evidence of effectiveness for preventing child fatalities and severe child injuries related to child maltreatment are briefly summarized in Table 2. Overall, these programs have been rated according to their effectiveness for maltreatment prevention more generally. In addition, some more general types of services are associated with less risk of child fatalities. Douglas (2016) found that receiving family support services, court-appointed representation, foster care, and case management services all significantly reduce the risk for a child fatality, with odds ratios (OR) ranging from .25–.69 ($p < .001$–$.046$). There was also a trend toward significance for family preservation, with OR =.69, $p = .092$. But more research is needed about specific models, as well as information about intensity, duration and combinations of services. Therefore these services are not listed in Table 2.

Table 2. Interventions to Consider for Preventing Severe Child Injuries or Fatalities

Intervention	References
Childhelp Speak Up Be Safe.* The evolution of Good-Touch Bad-Touch®, it offers a 21st century approach to the prevention of abuse by utilizing web-based tools, curriculum on Internet safety skills and cyber-bullying and a redirected focus on adult responsibility and skill building in keeping children safe.	http://www.childhelp.org/programs/entry/speak-up-be-safe
Child Welfare Birth Match.* This innovative screening and rapid response approach has been tested in Michigan, New York City and Maryland. It involves sharing administrative data such as child welfare, vital statistics and other public health data in real time to identify newborns who have been born to parents who have certain characteristics (e.g., a child who has siblings currently in foster care and parents who have had their parental rights terminated for another child within a certain time period such as the previous four years).	Shaw et al. (2013)
Crisis Nurseries.* Emergency support services like crisis nurseries are beginning to be documented as effective ways of reducing parental stress, physical child abuse, and family violence, addressing unmet parental medical needs, and resolving other issues that result in child abuse and out-of-home placements for young children.	ARCH National Respite Network (2006) Cole & Hernandez (2008) Cole & Hernandez (2011) Cole, Wehrmann, Dewar, & Swinford (2005)
Parent–child interaction therapy (PCIT)***. This intervention can prevent physical abuse. It largely focuses on the way that parents interact with their children by building and strengthening the parent–child dyad. Studies (including at least one in rural areas) have found a positive relationship between PCIT and reductions in being at risk for and in actual instances of child maltreatment, especially with regard to physical abuse, even years after treatment completion.	Prevention of physical abuse data: (Chaffin, Funderburk, Bard, Valle, & Gurwitch, 2011; Chaffin et al., 2004; Timmer, Urquiza, Zebell, & McGrath, 2005). Long-term follow-up over years: (Chaffin et al., 2004) Intervention details: (Barnett, Rosenberg, Rosenberg, Osofsky, & Wolford, 2014; Willheim, 2013; Wright, 1986; Funderburk & Elherg, 2011; Urquiza & McNeil, 1996)
SafeCare® Established in 1979, SafeCare is a parent-training curriculum for parents who are at risk or have been reported for maltreatment. Through SafeCare, trained home visitors work with families who have children age 0-5 in their home. SafeCare is well suited to addressing child neglect, the most common form of maltreatment, including poor parental supervision or parental inattention to child safety issues.	http://safecare.publichealth.gsu.edu Chaffin, Bard, Bigfoot & Maher (2012) Gershater-Molko et al. (2002) Lutzker & Rice (1984)

Table 2. Interventions to Consider for Preventing Severe Child Injuries or Fatalities (cont'd.)

Intervention	References
Safe Environment for Every Kid (SEEK) Project.* This enhanced pediatric care for families at risk offers a practical approach to the identification and management of targeted risk factors for child maltreatment for families with children aged 0-5, integrated into pediatric primary care. SEEK is suitable for all medical professionals providing primary care to children - pediatricians, pediatric nurse practitioners, family medicine physicians, physician assistants and mental health professionals. Dubowitz and his colleagues examined the efficacy of the Safe Environment for Every Kid (SEEK) model of pediatric primary care in a community clinic in Baltimore. The results suggest that enhancing physicians' abilities through training is one way to help families decrease risk factors for child maltreatment	Dubowitz, Feigelman, Lane, & Kim (2009) Dubowitz, Prescott, Feigelman, Lane & Kim (2008) Kim, Dubowitz, Hudson-Martin, & Lane (2008) Feigelman, Dubowitz, Lane & Kim (2011) MacMillan et al. (2009) University of Maryland Medical Center (Undated)
Substance abuse treatment programs.* Community-based substance abuse treatment programs (e.g., PCAP, START) may prevent some of the neglect-related deaths or severe injuries of infants and children because of parental incapacity due to drugs, alcohol and/or co-sleeping. For example, The Parent-Child Assistance Program (PCAP) serves high-risk mothers in Washington State who abuse alcohol and/or drugs during pregnancy.	PCAP: Maher & Grant (2013) START: Hall et al. (2016)
Timely Recognition of Abusive Injuries (TRAIN) Collaborative.* Nineteen hospitals in Ohio have signed on to receive training to identify maltreatment injuries earlier to prevent further abuse and child fatalities, and there is an associated research collaborative. This kind of approach is especially pertinent because early warning signs are often missed in young children by the primary reporters, including medical professionals.	http://www.cleveland.com/healthfit/index.ssf/2016/10/9_ohio_hospitals_sign_on_to_sc.html http://www.ohiochildrenshospitals.org/research

Level of evidence: *Promising Research Evidence; **Supported by Research Evidence; and ***Well-Supported by Research Evidence.

Community and System Design Strategies

It is important to step back and consider the larger ecological context in which severe child injuries and fatalities due to maltreatment occur, and the risk and protective factors that have been associated with child maltreatment. (See Figures 1-3.) With this wider frame, some experts recognize the value of the following:

- *Geographic analysis* to identify neighborhoods where the most vulnerable children live. For example, Daley and her colleagues have used Risk Terrain Modeling to predict child maltreatment (Daley et al., 2016), and Wildeman (2017) is using NCANDS and AFCARS data to map cumulative risk of child maltreatment and foster care placement by state and county.
- *Promoting community norms that protect children* such as not using corporal punishment, promoting social connections among neighbors, and not leaving children in the care of other children who lack the capacity for child care of their siblings. See for example, some of the broad Triple P tier one strategies and ACEs prevention and mitigation initiatives. (http://www.triplep.net/glo-en/home and http://resiliencetrumpsaces.org)

- *Other public health-informed policies to increase community capacity to support families,* such as "Family Action Councils" or "Neighborhood Action Groups" where parents develop social supports to reduce their sense of isolation and learn practical tips for raising their children (Hargreaves et al. 2015; McCroskey, Pecora, Franke, Christie & Lorthridge, 2012).
- *Income and housing supports* that improve parental capacity to care for their children by increasing key resources and by reducing the stress that can contribute to greater risk of child maltreatment.
- *Parent coaching.* Helping new parents understand the importance of adequate sleep for themselves and coaching them through feeding or infant crying challenges can also make a difference (Hurley et al., 2013; Olds et al., 2014). A recent study used NCANDS data to examine the impact of services on child fatalities over a five-year period. It underscores the impact of child welfare and family support services. One judicial-related finding from this study is worth exploring further: Children with legal representation were less likely to experience a child maltreatment fatality (Douglas, 2016).
- *Implementing an agency-wide "culture of safety."* Child welfare leaders and other experts in Tennessee have focused on this area for the past few years, drawing ideas from continuous quality improvement, as well as aviation, nuclear power and maritime safety research. They have made a series of strategic policy and organizational systems shifts that bode well (Vogus, Cull, Hengelbrok, Modell & Epstein, 2016). This includes child welfare leaders focusing on all factors that contribute to a service failure instead of placing the blame on workers or their supervisors (Turnell, Murphy & Munro, 2013).
- *Workload management* is essential because large caseloads may prevent caseworkers from making essential kinds of collateral contacts. It may also rush decision-making because not enough time has been invested in safety assessment, outreach to other family members, and development of a safety network (Nelson-Dusek et al., in press).
- *Case consultation mandates* can help ensure that staff get "just-in-time" case review and consultation for certain kinds of higher-risk cases. For example, the Federal Commission to Eliminate Child Abuse and Neglect Fatalities recommended that "every state should review their policies on screening reports of abuse and neglect to ensure that the children most at risk for fatality – those under age three – receive the appropriate response, and they and their family are prioritized for services, with heightened urgency for those under the age of 1." (Commission to Eliminate Child Abuse and Neglect Fatalities, 2016a, b.)
- The LA Board of Supervisors requested that the County Department pair CPS investigators with a nurse for all child maltreatment cases for children under 2 years old. In physical abuse cases with multiple fractures and other indicators, genetic testing for Osteogenesis Imperfecta may be needed (Pepin & Byers, 2015). The Eckerd Rapid Safety Feedback approach mandates case review with quality assurance staff for cases identified as high-risk by a regularly refreshed predictive risk model. (See http://www.eckerd.org/programs-services/system-of-care-management/eckerd-rapid-safety-feedback)
- *Telemedicine strategies* can help workers in rural areas or those working weekends and late night shifts to have access to high-quality consultation from a variety of medical, developmental, substance abuse, behavioral health and other specialists.

Other Possible Action Strategies Based on Research and Subject Matter Expert Convenings

Besides using the broad-scale but focused prevention efforts in Tables 1 and 2, and helping child welfare agencies and their community partners scale up the systems change strategies listed above, additional actions include:

1. Increase the research base about high-risk families and what works to prevent maltreatment. NSCAW-II and other data about what kinds of services children living at home are receiving and how the youth are functioning could be analyzed further. The analysis should include the large percent of children at home and not receiving services for comparison purposes.

2. Disseminate more broadly and deeply what Casey Family Programs, Center for Disease Control and Prevention, Public Health, and others learned through five child safety forums, and what the Commission to Eliminate Child Abuse and Neglect Fatalities learned so that these strategies actually become feasible in states and counties. (See Appendix A.) Strategies should be actively supported by government agencies responsible for child welfare, community supports, health, employment, housing, public assistance, and public health. Note that about 30 states participated in those Casey forum discussions, and jurisdictions are already implementing some of these strategies (Chahine, Pecora, Sanders & Wilson, 2013; Sanders, 2017).

3. Develop and evaluate a ***child welfare practice model for infants and toddlers***. This might include evaluating one or more approaches that have population-level effects. For example, Triple P (Positive Parenting Program) is a multi-level parenting support program that has a media campaign as Level 1 and intensive parent treatment as Level 4. Traditional programs appear to not have the kind of wide-spread reach and effect that we need. This may also involve more widespread use of practice innovations like Three Houses (see http://bayareaacademy.org/wp-content/uploads/2013/05/parker-handout-prompts.pdf) for interviewing children to identify safety plans.

4. Safety predictors in terms of the leading causes of death among infants, young children and adolescents have been summarized by the CDC and others. But the risk factors for severe injury and death for those groups of children, including but not limited to injuries and fatalties due to child maltreatment could be analyzed in more sophisticated ways. (See for example, Barth et al., 2016, for a summary of domestic and international methodological advances that could be used.) For example, nearly three-quarters (74.8%) of all child fatalities were younger than 3 years old. How could we use "capture-recapture", signal detection, frequently refreshed predictive analytic algorthmns such as those used by Eckerd Rapid Safety Feedback, and other advances to learn more about how to spot and respond better to these families? The best of what we know about ***screening, risk assessment*** and ***decision-making*** from medicine, law enforcement, maritime safety, cognitive psychology, legal risk management and other fields could be synthesized better and applied more systematically.

Conclusions

While well-intentioned, current child welfare services may be failing to protect children from fatal and serious injuries due to constraints in policy, program design, practice and funding. Drawing from advances in the injury control field, this review found relatively few evidence-based practices for preventing child fatalities and severe child injuries related to child maltreatment. But there are promising interventions and a wide range of community, policy and systems change strategies that could be tested further.

Federal agencies, state agencies, and foundations could also collaborate with other stakeholders to evaluate upstream prevention and support services for families where risks for maltreatment are particularly high (e.g., families with certain risk factors such as a previous severe child injury, where parents rights have been terminated for a previous child, infants with a previous CPS referral, children born to young mothers where no paternity has been recorded) (Putnam-Hornstein & Needell, 2011). This would likely involve teaming with other fields where primary prevention is a major priority, as well as those who have experience working with at-risk families more generally, such as the field of public health.

References

ARCH National Respite Network and Resource Center. (2000). *ARCH 5.2.* Chapel Hill, NC: Author: Chapel Hill Training Project, Inc.

Barnett, E. R., Rosenberg, H. J., Rosenberg, S. D., Osofsky, J. D., & Wolford, G. L. (2014). Innovations in practice: Dissemination and implementation of child–parent psychotherapy in rural public health agencies. *Child and Adolescent Mental Health*, 19, 215–21.

Barth, R. P., Putnam-Hornstein, E., Shaw, T. V., & Dickinson, N. S. (2016). *Safe children: Reducing severe and fatal maltreatment* (Grand Challenges for Social Work Initiative Working Paper No. 17). Cleveland, OH: American Academy of Social Work and Social Welfare. Retrieved December 20, 2015 from http://aaswsw.org/wp-content/uploads/2015/12/WP17-with-cover.pdf

Bugental, D.P., Ellerson, P.C., Lin, E.K., Rainey, B., Kokotovic, A. & O'Hara, N. (2002). A cognitive approach to child abuse prevention. *Journal of Family Psychology*, 16, 243-258.

Centers for Disease Control and Prevention, National Center for Health Statistics. *Compressed Mortality File 1999-2010 on CDC WONDER Online Database*, released January 2013. Data are compiled from Compressed Mortality File 1999-2010 Series 20 No. 2P, 2013. http://wonder.cdc.gov/cmf-icd10.html

Centers for Disease Control and Prevention. (Undated). Web-based Injury Statistics Query and Reporting System (WISQARS) (website). National Center for Injury Prevention and Control, Centers for Disease Control and Prevention (producer). Available at http://www.cdc.gov/injury/wisqars/index.html.

Chaffin, M. (2004). Is it time to rethink Healthy Start/Healthy Families? *Child Abuse and Neglect*, 28, 589-595.

Chaffin, M., Funderburk, B., Bard, D., Valle, L. A., & Gurwitch, R. (2011). A combined motivation and parent–child interaction therapy package reduces child welfare recidivism in a randomized dismantling field trial. Journal of Consulting and Clinical Psychology, 79, 84–95. doi:10.1037/a0021227

Chaffin, M., Silovsky, J. F., Funderburk, B., Valle, L. A., Brestan, E. V., Balachova, T. Jackson, S., Lensgraf, J. & Bonner, B. L. (2004). Parent-child interaction therapy with physically abusive parents: Efficacy for reducing future abuse reports. J*ournal of Consulting and Clinical Psychology*, 72, 500–510. doi:10.1037/0022-006x.72.3.500

Chaffin, M., Bard, D, Bigfoot. D. S., & Maher, E. J. (2012). Is a structured, manualized, evidence-based treatment protocol culturally competent and equivalently effective among American Indian parents in child welfare? *Child Maltreatment*, 17, 242-252.

Chahine, Z., Pecora, P.J., Sanders, D. & Wilson, D. (Eds.) (2013). Preventing severe maltreatment-related injuries and fatalities: Applying a public health framework and innovative approaches to child protection. *Child Welfare*, 92(2), 9-253.

Cole, S. A., & Hernandez, P. (2008). Crisis nursery outcomes for caregivers served at multiple sites in Illinois. *Children and Youth Services Review*, 30, 452–465.

Cole, S. A., Wehrmann, K. C., Dewar, G., & Swinford, L. (2005). Crisis nurseries: A vital component in the system of care for families and children. *Children and Youth Services Review*, 27, 995-1000.

Cole, S.A. & Hernandez, P. (2011). Crisis nursery effects on child placement after foster care. *Children and Youth Services Review*, 33, 1445–1453.

Commission to Eliminate Child Abuse and Neglect Fatalities. (2016a). *FACT SHEET - Within Our Reach: A National Strategy to Eliminate Child Abuse and Neglect Fatalities*. Washington, DC: Government Printing Office, p.1.

Commission to Eliminate Child Abuse and Neglect Fatalities. (2016b). *Within our reach: A national strategy to eliminate child abuse and neglect fatalities*. Washington, DC: Government Printing Office. Retrieved from http://www.acf.hhs.gov/programs/cb/resource/cecanf-final-report

Covington, T. M., & Petit, M. (2013). Prevention of child maltreatment fatalities. In K. Briar-Lawson, M. McCarthy, & N. S. Dickinson (Eds.), *The Children's Bureau: Shaping a century of child welfare practices, programs, and policies* (pp. 141–165). Washington, DC: NASW Press.

Daley, D., Bachmann, M., Bachmann, B.A., Pedigo, C., Bui, M. & Coffman, J. (2016). Risk terrain modeling predicts child maltreatment. *Child Abuse and Neglect*, 62, 29–38.

Douglas, E. M. (2013). Case, service and family characteristics of households that experience a child maltreatment fatality in the United States. *Child Abuse Review*, 22, 311–326.

Douglas, E.M. (2016). Testing if social services prevent fatal child maltreatment among a sample of children previously known to child protective services. *Child Maltreatment*, pp. 1-11, DOI: 10.1177/1077559516657890 cmx.sagepub.com

Dubowitz H., Feigelman S., Lane W. & Kim J. (2009). Pediatric primary care to help prevent child maltreatment: *The Safe Environment for Every Kid* (SEEK) model. *Pediatrics*. 2009; 123: 858-64.

Dubowitz H., Prescott L., Feigelman S., Lane W., Kim J. (2008). Screening for intimate partner violence in an urban pediatric primary care clinic. *Pediatrics*, 121(1): e85-91

Feigelman, S., Dubowitz, H., Lane, W., Grube L. & Kim J. (2011). Training pediatric residents in a primary care clinic to help address psychosocial problems and prevent child maltreatment. *Academic Pediatrics*.11: 474-480.

Feigelman S., Dubowitz H., Lane W., & Kim J. (2009). Screening for harsh punishment in a pediatric primary care clinic. *Child Abuse Neglect*, 33, 269–277.

Funderburk, B. W., & Elherg, S. (2011). Parent-child interaction therapy. In J. C. Norcross, G. R. VandenBos, & D. K. Freedheim (Eds.), History of psychotherapy: Continuity and change (2nd ed., pp. 415–420). Washington, DC: American Psychological Association.

Gershater-Molko, R. M., Lutzker, J. R., et al. (2002). Using recidivism data to evaluate Project SafeCare: Teaching bonding, safety, and health care skills to parents. *Child Maltreatment*, 7(3), 277-285.

Hall, M. T., Wilfong, J., Huebner, R.A., Posze, L., & Willauer, T. (2016). Medication-assisted treatment improves child permanency outcomes for opioid-using families in the child welfare system. *Journal of Substance Abuse Treatment*, 71, 63–67.

Hargreaves, M. et al. (2015). *APPI Cross-site Evaluation: Interim Report*. Cambridge, MA: Mathematica Policy Research. Retrieved July 15, 2017 from www.appi-wa.org or www.mathematica-mpr.com (keyword: APPI)

Hurley, K. M., Pepper, M. R., Candelaria, M., Wang, Y., Caulfield, L. E., Latta, L., Hager, E.R., Black, M. M. (2013). Systematic development and validation of a theory-based questionnaire to assess toddler feeding. *Journal of Nutritio*n, 143(12), 2044–2049. doi:10.3945/jn.113.179846

Kim J., Dubowitz H., Hudson-Martin E., Lane W. (2008). Comparison of 3 Data Collection Methods for Gathering Sensitive and Less Sensitive Information. *Ambulatory Pediatrics*, 8(4): 255-60.

Lutzker, J. R., & Rice, J. M. (1984). Project 12-Ways: Measuring outcome of a large scale in-home service for the treatment and prevention of child abuse and neglect. *Child Abuse and Neglect*, 8, 519-524.

Maher, E.J. & Grant, T. (2013). *Parent-Child Assistance Program outcomes suggest sources of cost savings for Washington State*. (Research brief) Seattle: Casey Family Programs. Retrieved from http://depts.washington.edu/pcapuw/inhouse/PCAP_Cost_Savings_Brief_Feb_2013.pdf. Also see: http://depts.washington.edu/pcapuw

McCroskey, J., Pecora, P.J., Franke, T., Christie, C.A. & Lorthridge, J. (2012). Strengthening families and communities to prevent child abuse and neglect: Lessons from the Los Angeles Prevention Initiative Demonstration Project. *Child Welfare*, 91(2), 39-60.

Miyamoto, S., Romano, P.S., Putnam-Hornstein, E., Thurston, H., Dharmar, M. & Jill G. Joseph, J.G. (2016). Risk factors for fatal and non-fatal child maltreatment in families previously investigated by CPS: A case-control study. *Child Abuse & Neglect*, 63, 222-232.

Nelson-Dusek, S., Idzelis Rothe, M.I., Humenay Roberts, Y.H. & Pecora, P.J. (In press). Assessing the value of family safety networks in child protective services: Early findings from Minnesota. *Child and Family Social Work*.

New York State Department of Social Services. (1980). *New York State Department of Social Services report to the Governor and the Legislature on Child Protective Services*, Table 9. Albany: NY: New York State Department of Social Services, as cited in Nunno, M.A., & Motz, J.K. (1988). The development of an effective response to the abuse of children in out-of-home care. *Child Abuse & Neglect*, 12, 521-528.

Olds, D.L., Kitzman, H., Knudtson, M.D., Anson, E., Smith, J.A., & Cole, R. (2014). Effect of home visiting by nurses on maternal and child mortality: Results of a 2-decade follow-up of a randomized clinical trial. *JAMA Pediatrics*, 168(9):800-806. Retrieved from doi:10.1001/jamapediatrics.2014.472.

Pepin, M.G. & Byers, P.H. (2015). What every clinical geneticist should know about testing for osteogenesis imperfecta in suspected child abuse cases. *Am J Med Genet C Semin Med Genet* 169:307-313.

Prinz, R.J., Sanders, M.R., Shapiro, C.J., Whitaker, D.J., & Lutzker, J.R. (2009). Population-based prevention of child maltreatment: The U.S. Triple P System Population Trial. Prevention Science, 10, 1-13

Poole, M.K., Seal, D.W. & Taylor, C.A. (2014). A Systematic review of universal campaigns targeting child physical abuse prevention. *Health Education Research*, 29(3), 388-432.

Putnam-Hornstein, E. & Needell, B. (2011). Predictors of child welfare contact between birth and age five: an examination of California's 2002 birth cohort. *Children & Youth Services Review*, 33(11), 2400-2407.

Putnam-Hornstein, E., Cleves, M., Licht, R. & Needell, B. (2013). Risk of fatal injury in young children following abuse allegations: evidence from a prospective, population-based study. *American Journal of Public Health*, 103(10), e39-e44

Rindfleisch. N. & Rabb. J. (1984). Dilemmas in planning for the protection of children and youths in residential facilities. *Child Welfare*, 63:205-215.

Rivara, F. P. & Grossman, D.C. (2015). Injury control. In R.M. Kliegman, B.F. Stanton, J.W. St. Geme, N.F. Schor & R.E. Behrman (Eds.) *Nelson Textbook of Pediatrics*. Philadelphia: Elsevier Publishers, 1-41 to 1-47.

MacMillan, H.L., Wathen, C.N., Barlow, J., Fergusson, D.M., Leventhal, J.M., Taussig, H.N. (2009). Interventions to prevent child maltreatment and associated impairment. *Lancet*, 373, 250-66, p. 254.

Sanders, D. (2017). Policy and practice changes form around national strategy to reduce fatalities and improve child safety. *Chronicle of Social Change*, Retrieved from https://chronicleofsocialchange.org/opinion/policy-and-practice-changes-form-around-national-strategy-to-reduce-child-maltreatment-fatalities-and-improve-child-safety/25095.

Shaw, T.V., Barth, R.P., Mattingly, J., Ayer, D. & Berry, S. (2013). Child welfare birth match: Timely use of child welfare administrative data to protect newborns. *Journal of Public Child Welfare*, 7(2), 217-234.

Smith, L. R., Gibbs, D., Wetterhall, S., Schnitzer, P. G., Farris, T., Crosby, A. E., & Leeb, R. T. (2011). Public health efforts to build a surveillance system for child maltreatment mortality: Lessons learned for stakeholder engagement. *Journal of Public Health Management and Practice*, 17(6), 542–549. doi:10.1097/PHH.0b013e3182126b6b

Timmer, S. G., Urquiza, A. J., Zebell, N. M., & McGrath, J. M. (2005). Parent-child interaction therapy: Application to maltreating parent child dyads. *Child Abuse & Neglect*, 29, 825–842.

Turnell, A, Murphy, T., & Munro, E. (2013). Soft is hardest: Leading for learning in child protection services following a child fatality. *Child Welfare*, 92(2), 199-216.

University of Maryland Medical Center. (Undated). SEEK Project, University of Maryland Medical Center. (See http://www.umm.edu/pediatrics/seek_project.htm)

U.S. Department of Health and Human Services, Administration for Children and Families, Administra¬tion on Children, Youth and Families, Children's Bureau. (2016). *Child Maltreatment* 2015, p. 52-55. Retrieved on January 28, 2017 from http://www.childrensrights.org/wp-content/uploads/2017/01/cm2015.pdf

Uliando, A. & Mellor, D. (2012). Maltreatment of children in out-of-home care: A review of associated factors and outcomes. *Children and Youth Services Review* 34, 2280–2286.

Urquiza, A. J., & McNeil, C. B. (1996). Parent-child interaction therapy: An intensive dyadic intervention for physically abusive families. *Child Maltreatment*, 1, 134–144.

Vogus, T.J., Cull, M.J., Hengelbrok, N.E., Modell, S. J. & Epstein, R.A. (2016). Assessing safety culture in child welfare: Evidence from Tennessee. *Children and Youth Services Review*, 12 psychotherapy. *Infant Mental Health Journa*l, 7, 247–263.

Wildeman, C. (2017). *Geographic variation in the cumulative risk of maltreatment and foster care placement*. Presentation to Casey Family Programs, Seattle, Washington, March 8, 2017.

Willheim, E. (2013). Dyadic psychotherapy with infants and young children: Child-parent psychotherapy. *Child and Adolescent Psychiatric Clinics of North America*, 22, 215–239.

Wright, B. M. (1986). An approach to infant-parent psychotherapy. *Infant Mental Health Journal*, 7, 247–263.

Appendix A: Lessons from the Safety Forums Sponsored by Casey Family Programs

Child maltreatment-related fatalities are a public health issue. The prevalence of maltreatment overall in the population and the numbers of children who die due to maltreatment are substantial. A significant proportion of child maltreatment-related deaths occurs in families who have no history of involvement with the child welfare system. Therefore, it would be prudent for us to look at the issue of child fatalities not just through the lens of child welfare but from a broader public health perspective.

High-quality data, as well as other kinds of research evidence, are essential to inform the strategy and assess its results. This starts with surveillance: being able to count and measure the problem. This strategy also includes data to identify families at the highest risk, which is necessary to target upstream prevention. And it includes data to place fatalities, injuries, and "near-misses" in a systemic context to inform system improvements that have been crucial to safety engineering successes. In addition, evidence synthesized from past research should inform the initial choices of programs and strategies, which then can be tracked for effectiveness and fine-tuned over time.

Successful strategies are comprehensive. This lesson emerges above all from the public health successes that are comprehensive in multiple ways. First, they are multi-level, potentially including components at the level of the individual, the family, the community, service systems, and public policy, as well as addressing broader public attitudes and beliefs. Second, they target several different levels of prevention – immediate prevention of death or injury, as well as more "upstream" prevention targeted at high-risk groups or individuals. They may also include universal prevention efforts targeted toward an entire community or nation.

Strategies are not limited to any one sector or agency. The theme of multi-agency and multi-sector strategies, including health, law enforcement, and education, as well as child welfare systems and service providers, received particular attention. Other sectors or partners identified included the media, elected officials, the broader public, and anti-poverty and affordable housing experts and activists.

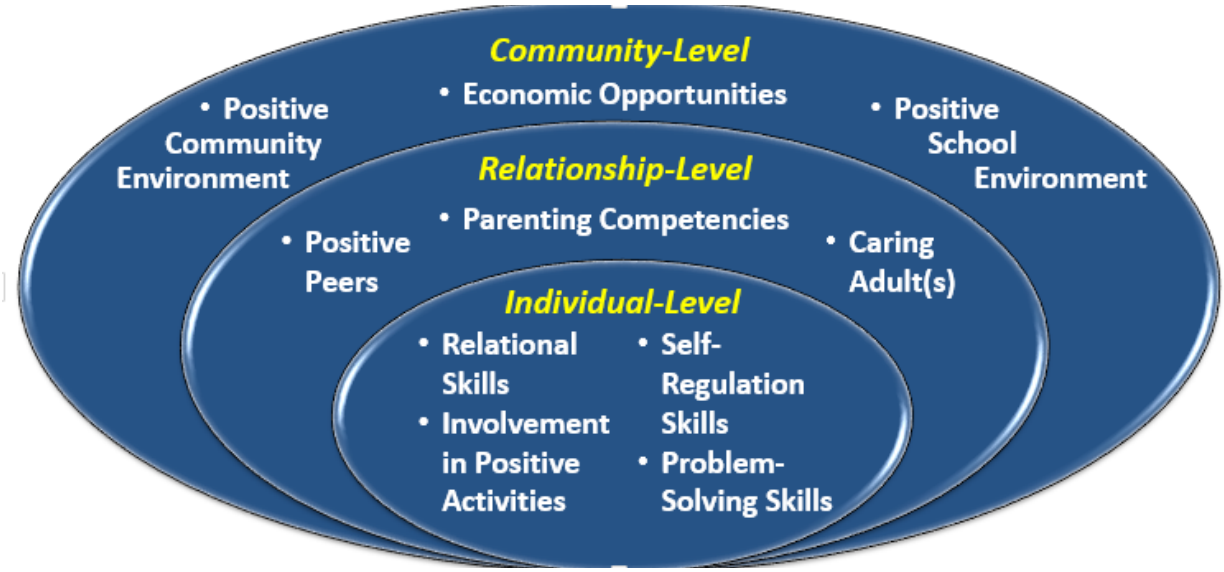
Successful strategies are focused. Comprehensive is not the same as trying to do everything. The key is a focused approach, based on data and evidence, with high-impact opportunities that can make a difference. In the public health world, continuous attention is paid to what is working and to gaps that need to be addressed.

We can succeed. Public health and safety engineering efforts have reduced deaths and injuries from many causes that initially seemed intractable. This has been true even when, at the beginning of the effort, those causes seemed deeply ingrained in cultural and individual beliefs (such as drunk driving, smoking, bike riding without helmets, low use of infant car seats) or driven by errors caused by interactions between humans (e.g., medical errors) or hampered by a belief that the injury or fatality was the result of unpreventable bad luck (e.g., plane crashes). Child protection efforts can be improved by applying these lessons learned from safety engineering and public health approaches. (pp. 15-16)

Source: Chahine, Z., Pecora, P.J., & Sanders, D. (2015). Special foreword: Preventing severe maltreatment-related injuries and fatalities: applying a public health framework and innovative approaches to child protection. *Child Welfare*, 92(2), 13-17.

Figure 1. Preventing Child Abuse and Neglect by Targeting All Levels from the Centers for Disease Control and Prevention

Figure 2. Top Protective Factors for Children in Child Welfare



Source: Development Services Group, Inc. (2013). *Protective factors for populations served by the administration on children, youth, and families. A literature review and theoretical framework: Executive summary.* Washington, D.C.: U.S. Department of Health and Human Services, Administration for Children and Families, Children's Bureau, p. 6. Retrieved May 20, 2016, from http://www.dsgonline.com/acyf/DSG%20Protective%20Factors%20Literature%20Review%202013%20Exec%20Summary.pdf

Figure 3. Examples of Varied Approaches to Increasing Child Safety