Child death reviews: a gold mine for injury prevention and control

Chukwudi Onwuachi-Saunders, Samuel N Forjuoh, Patricia West, Cimon Brooks

Abstract

Objectives—The purpose of this study was to demonstrate how child death review teams can be used to prevent future deaths through retrospective, multiagency case analysis and recommendations for educational programs and policy change.

Methods—A listing of all deaths to persons ages 21 years and younger in Philadelphia that occurred in 1995 was compiled by the Philadelphia Interdisciplinary Youth Fatality Review Team (PIYFRT), a multiagency, multidisciplinary, community based group created in 1993 with the mission to prevent future deaths through review, analysis, and initiation of corrective actions. Data were collected on demographic variables, as well as the circumstantial variables on injuries such as weapon type, alcohol and drug use, and contact with the criminal justice system, among others. Each case was reviewed thoroughly to determine whether or not the death was preventable. Selected injury related death cases were analyzed further by demographic and circumstantial variables.

Results—In 1995, 607 children ages 21 years and younger died in Philadelphia from natural causes (61.6%), unintentional injuries (16.3%), homicide (18.6%), suicide (2.3%), and undetermined causes (1.2%). More than a third (37.2%) of all deaths were considered preventable. Of the injury deaths (n=224), 95% were judged to be preventable. Preventable fire/burn injury deaths (n=29) were associated with lack of a smoke detector, non-supervision of children, and faulty home appliances. Violent deaths were associated with substance abuse, gang involvement, chronic truancy, academic failure, and access to weapons.

Conclusions—Relevant policies for these preventable or intervenable deaths are discussed such as use of non-battery powered smoke detectors.

(Injury Prevention 1999;5:276-279)

Keywords: death reviews; child death reviews; violence

Injury remains the leading cause of death and disability among children world wide. In the United States, injuries claim nearly 20 000 lives and permanently disable 30 000 children each year.^{1,2} A 1983 report by the US Centers for Disease Control and Prevention highlighted that children in the US suffer disproportionately from injury deaths, particularly from violence,

compared with their counterparts in other industrialized nations in the world.³ Violence is the second leading cause of death for youth aged 15-24 years in the US.² These grim statistics highlight the serious health effects of injury on children. What is even more startling is that many of these injury deaths are eminently preventable.

The challenge for the injury arena has been to move from analysis to action. The problem is clear, but the solutions are still hazy. Applying the public health response to solving this issue would be logical.⁴ The steps to this approach include defining the issue through data collection or surveillance; analyzing data to identify potential risk factors, enabling factors, and barriers; developing interventions based on the analysis; implementing interventions through community based programs; and using evaluation results to modify and re-evaluate original interventions.

Although child death review teams have used this approach in the US, in part, to identify causes of death, surrounding circumstance and the needed policy changes,⁵⁻⁹ and no doubt other countries may have this process, to our knowledge, the child death review process has not been adequately described with regards to policy response. The Philadelphia Interdisciplinary Youth Fatality Review Team (PIYFRT), created in June of 1993, has many elements of this approach. It represents a new, multiagency, multidisciplinary, community based process by which data are routinely and systematically collected, and analyzed to highlight potential risk factors, as well as to determine the enabling factors and barriers for youth fatalities. Most importantly, this process fosters the development and implementation of interventions to prevent injury mortality and morbidity among children in Philadelphia.

Philadelphia is the fifth largest city in the US with approximately 1.6 million persons: 54% white, 40% African Americans, and 6% Latinos and Asians. Philadelphia, like the rest of the nation, has experienced an increase in the number of youth who have died as a result of both unintentional injuries and violence. Subsequently, Operation Peace in Philadelphia (OPP), a citywide community based antiviolence/peace promotion initiative was developed to help reduce this epidemic. OPP's components include a long term community based collaboration; an ongoing media awareness campaign; and an innovative information and data system that includes the PIYFRT.

The PIYFRT represents a comprehensive effort to enhance research on youth fatalities.^{10,11} It is unique because the death

Delta Consultancy
Group, Washington,
DC, 901 6th Street,
SW, #401, Washington,
DC 20024, USA
C Onwuachi-Saunders
C Brooks

Department of Family
Medicine, Texas A&M
University System
Health Science Center,
Scott and White Clinic
and Memorial
Hospital, Temple,
Texas
S N Forjuoh

Public Health
Consultant,
Philadelphia,
Pennsylvania
P West

Correspondence and reprint
requests to: Dr
Onwuachi-Saunders (e-mail:
cashakir@aol.com)

Table 1 Preventability of youth deaths by manner of death, Philadelphia, 1995

Manner of death	Preventability			Total
	Yes (%)	No (%)	Need more information (%)	
Natural	10 (2.7)	337 (90.8)	24 (6.5)	371
Unintentional injury	95 (96.0)	3 (3.0)	1 (1.0)	99
Suicide	13 (100.0)	—	—	13
Homicide	105 (93.8)	—	7 (6.3)	112
Undetermined	1 (14.3)	—	6	7
Total	224 (37.2)	340 (56.5)	38 (6.3)	602

review process is linked to the city's violence prevention and peace promotion initiative. In addition, it is the only child death review process in the nation with a process focusing solely on youth homicides and suicides. Its mission is to prevent future child deaths by review, analysis, and corrective actions. The PIYFRT achieves its mission by collecting comprehensive information about victims, including the circumstances preceding the death in order to understand more about prevention. The PIYFRT process, modeled after the traditional child death reviews, shifts the paradigm by calling upon broader agency, multidisciplinary participation. Two separate teams review deaths based on how the child died: homicides and suicides are reviewed by one team, while natural deaths, unintentional injury deaths, and undetermined deaths are reviewed by another. The members of both teams include one Hispanic and one predominantly African American community based organization and many other organizations such as the district attorney's office, fire and police departments, office of the medical examiner, and several hospitals.

In this paper we demonstrate the use of child death reviews to prevent future deaths.

Methods

Each month, all team members received a list of all deaths involving youth 21 years and younger from the Philadelphia vital statistics office. To assure that all deaths were reviewed accurately, the lists were compared with other lists obtained from the state vital statistics, medical examiners' database, and various participating agencies. Although many non-Philadelphia County residents died in the city, only deaths involving county residents were reviewed. Members were responsible for searching their own agencies for all information on the decedents. Because the information discussed by the fatality review members was highly confidential, all members signed a confidentiality statement. To ensure further confidentiality, information was only shared verbally.

At the monthly meetings, agencies presented their information and a staff person entered the relevant information on each of the variables onto specific data forms. There were separate forms for homicides, suicides, and unintentional or natural deaths. Once all the available data were collected on each death, the committee determined whether the death was preventable. A *preventable death* was defined as

one in which, with retrospective analysis, a reasonable intervention may have prevented the death. "Reasonableness" was defined to take into consideration the condition, circumstances, or resources available. At no point during these deliberations was any determination of preventability construed to equate predictability. If the death was judged to be preventable, the committee then discussed or developed interventions and policies to be implemented at the individual, agency and/or community level. The potential intervention strategies and the aggregated data were reviewed at quarterly policy meetings involving team members, as well as invited guests such as city council members, community activists, and agency leaders. Selected injury related death cases were analyzed by demographic characteristics and circumstantial variables.

Results

In 1995, 607 youth aged 21 years and younger died in Philadelphia. This number represented an 8% decrease from 1994 (662 deaths). Sixty per cent were due to natural deaths, 18.6% resulted from homicides, 16.3% resulted from unintentional injuries, 2.3% were due to suicides, and 1.2% were undetermined. This distribution was similar to that in 1994. The leading causes for unintentional injury deaths were residential fires/burns (29.3%), occupancy of motor vehicles (15.2%), drowning (10.1%), and pedestrian injuries (7.1%).

PREVENTABLE DEATHS

Of all deaths, 37% were judged to be preventable. While the majority of natural deaths were judged to be non-preventable, all suicide deaths and the majority of homicides and unintentional deaths were judged to be preventable. Because of incomplete information on a few of the cases, preventability was not determined for 7% of the cases (table 1).

HOMICIDES (N=112)

Among the leading causes of death, homicides ranked first in youth ages 13–21 years. Even among infants, unintentional injuries and homicides tied for the fifth position among the 10 leading causes of death. The majority of homicide victims were African American males (81.4%). Most homicides were perpetrated by firearms, largely automatic handguns (43.4%), while a few were perpetrated by fists, knives, and through hanging or suffocation. Most homicide victims had histories of substance abuse, prior arrests, problems at school such as truancy and poor grades, as well as prior weapon related injuries.

FIRE/BURN DEATHS (N=29)

All 29 deaths due to fire/burns were judged to be preventable with more than half involving situations where the fire was started by a child aged 3–6 years. In half of the cases, the source of the fire was matches while the child was playing, and in the remaining cases the source was a cigarette (n=4) or a lighter (n=3). Other

Table 2 Demographic and circumstantial characteristics of fire/burn youth deaths, Philadelphia, 1995

Source of fire	No	Age of person (years) starting fire				Smoke detector		Activity of person starting fire	
		3	4	5	6	Yes	No	Playing	Other
Matches	8	—	2	4	2	3	5	7	1
Cigarette	5	4	1	—	—	4	1	1	4
Lighter	3	2	1	—	—	3	—	3	—
Space heater	3	*	*	*	*	—	3	—	3
Electrical wire	5	*	*	*	*	3	2	—	5
Other	5	*	*	*	*	2	3	—	5

*Not applicable.

sources of the fire included space heaters and faulty electrical wires (table 2).

Discussion

The concept of using the multidisciplinary death review team to analyze child deaths and from the data develop cost effective interventions is important. Regardless of the age group, injury was found to be a significant cause of youth death in Philadelphia. Child death review teams have contributed significantly to knowledge about child abuse and neglect. These traditional child death review processes have often been referred to as a “witch hunt” by some practitioners outside of the child abuse and neglect arena because of their focus on identifying the perpetrators. The PIYFRT process, on the other hand, has been expanded beyond this perspective and reflects a public health mission to prevent youth mortality, but most importantly to promote a healthy lifestyle. This process can be viewed as a “gold mine”. It is a gold mine in as much as by examining deaths, a cost effective alternative injury surveillance methodology can be created to better understand youth fatality in any community. In addition, this process alleviates or decreases “turfing” and increases collaboration among agencies, the stakeholders of children’s health. Perhaps the greatest asset is that these data, in conjunction with data from other communities (currently child death review teams now exist in almost every state and many local communities), offer a wealth of information to examine the many factors that increase the likelihood of injury that may lead to death.

As a result of this process, the following products and policy changes were generated and are being implemented in Philadelphia:

- Improved coordination among PIYFRT members.
- More comprehensive data collection to reduce the number of missing data; a decrease in inadequate death certificates¹²; a link between birth and infant death certificates; use of height/weight charts in the medical examiner’s office; and access to the 911 history for selected deaths.
- Prevention of interpersonal violence through development of a program for first time juvenile violators of the Uniform Firearm Act; increasing agency communication on juvenile bench warrants; recognizing the need for school nurses’ training on domestic violence; recognizing the need to highlight to

mothers the potential risk of assuming that all intimate partners are appropriate caregivers to their young children; and identifying the need for multidisciplinary, multi-agency school intervention teams.

- Prevention of unintentional injuries through increasing the enforcement of the child safety seat law; debating traffic regulations of public transportation buses used as school buses during school hours; increasing school based pedestrian safety education; recognizing the need for “Fire Starter” programs for children ages 3–7; and recognizing the need for non-battery powered smoke detectors.

This process allows for innovative data collection. The diverse data from many agencies allow a broader perspective and multidisciplinary input, thus the steps to more complete research. To illustrate this point, a scenario is the 5 year old who dies after playing with matches. When all fire related deaths are aggregated, most reviews by researchers would identify the lack of a smoke detector as the “potential” risk factor and a working smoke detector use campaign as the primary prevention strategy. There is a need to better understand the barriers and enabling factors as they relate to behavior. Through the PIYFRT process, the “barrier” identified was inadequate supervision by a family member who left matches available to a 5 year old. Both reviews would have come to the same conclusion—that the death was preventable. But only the PIYFRT process would identify the “barrier,” the lack of supervision by the caretaker and the intervention strategy—that is, highlighting the need for programs for young children who start fires. In this era of scarcity, understanding barriers and enabling factors is essential in making decisions about efficient resource allocations.

Many times an agency appears with what they believe is the “only story” as opposed to understanding that they have only one piece of the puzzle. The process of sharing confidential information frequently involves exposing the limitations of agency systems and the uncomfortable realization that many of those limitations fail to protect children. For team members to become effective in this process, a critical component is the willingness to participate. Participation increases as members develop trust in the process and better understand that the limitations of failures become the basis for system change.

The PIYFRT review process involving community participation with agencies (public and private) allows many of the pieces of the puzzle to be brought together. The comprehensive data generated serves to complete the puzzle needed by decision makers to formulate solutions. The benefits of sharing information can be viewed through the development of prevention strategies, interventions, products, policies, etc.

The challenge is to expand child death reviews beyond the focus of child abuse and neglect to one of public health so as to identify preventable child deaths and achieve effective

prevention. Presently, this process may serve as the one source of comprehensive data on the many factors contributing to youth deaths. It also offers a menu of what can be done, as well as providing the necessary information for decision makers competing for scarce public health resources. The PIYFRT serves as a model on the local level of a public health/community based approach which generates science based information and converts it into concrete action, a gold mine for injury prevention and control.

We wish to acknowledge the members of both PIYFRT review teams and the members of the task forces who are implementing the gold. We would also like to acknowledge the support of Robert K Ross, MD who had the foresight to declare violence among youth a public health emergency in Philadelphia and Rueben Warren, DDS, MPH, DrPH of the Centers for Disease Control and Prevention who supported that effort. We wish to thank Dawn Berney of the Philadelphia Health Management Corporation who provided technical support for the data collection process.

- 1 Center for Disease Control and Prevention. *Childhood injuries in the United States*. Atlanta, GA: Centers for Disease Control and Prevention, 1990.
- 2 Children's Safety Network. *A data book of child and adolescent injury*. Washington, DC: National Center for Education in Maternal and Child Health, 1991.

- 3 Centers for Disease Control. *Homicide surveillance, 1970-1978*. Atlanta, GA: Centers for Disease Control and Prevention, 1983.
- 4 Moore M, Prothrow-Stith D, Guyer B, *et al*. Violence and intentional injuries: criminal justice and public health perspectives on an urgent national problem. In: Reiss AJ, Roth JA, eds. *Understanding and preventing violence. Vol 4. Consequences and control*. Washington, DC: National Academy Press, 1997: 167-216.
- 5 Colorado Child Fatality Review Committee. *Annual report and conference proceedings*. Denver: Colorado Child Fatality Review Committee, 1991.
- 6 Committee on Child Abuse and Neglect and Committee on Community Health Services. Investigation and review of unexpected infant and child deaths. *Pediatrics* 1993;**92**: 734-5.
- 7 Durfee M, Gellert GA, Tilton-Durfee D. Origins and clinical relevance of child death review teams. *JAMA* 1991;**267**: 3172-5.
- 8 Ewigman B, Kivlahan C, Land G. The Missouri Child Fatality Study: under reporting of maltreatment fatalities among children younger than five years of age, 1983 through 1986. *Pediatrics* 1993;**91**:330-7.
- 9 Granik LA, Durfee M, Wells SJ. *Child death review teams: a manual for design and implementation*. Chicago: American Bar Association, 1991.
- 10 Onwuachi-Saunders C, West P, Berney D. Youth as victims of homicides: prevention of child homicide with an interdisciplinary youth fatality review team. Data needs in an era of health reform. *Proceedings of the 15th Public Health Conference on Records and Statistics*. Washington, DC: US Department of Health and Human Services, 1995: 25-7.
- 11 Philadelphia Department of Public Health, Operation Peace in Philadelphia. *Annual report*. Philadelphia, PA: Philadelphia Interdisciplinary Youth Fatality Review Team, 1997.
- 12 Hanzlick R. Improving accuracy of death certificates. *JAMA* 1995;**274**:537-8.

Faculty position in injury prevention

*Department of Occupational and Environmental Health,
University of Iowa College of Public Health*

The Department of Occupational and Environmental Health at the University of Iowa College of Public Health invites applications for a tenure track faculty position in injury prevention at the level of assistant or associate professor. Applications may also be considered at the level of faculty associate. The successful applicant will join the faculty of the Department of Occupational and Environmental Health and of the CDC-funded Injury Prevention Research Center. A secondary appointment in the Department of Epidemiology, or in the Division of Emergency Medicine is possible.

Applicants should have an MD, PhD, or other advanced professional degree with research experience related to the epidemiology of injury prevention. Strong epidemiological skills are required. The candidate should have publications in the peer reviewed literature and demonstrated teaching ability. Applicants should demonstrate outstanding research productivity or promise. Interest and experience in preventing injuries in a rural context is desirable. Demonstrated ability to work effectively with interdisciplinary research teams is desirable.

The University of Iowa offers a rich environment for collaborative research including a federally funded center in agricultural health and safety, a world class driving simulator, and a level 1 trauma center.

Please send a curriculum vitae, a statement of research interest, and names of three references to Dr Craig Zwerling, Chair, Search Committee, (#F1850) Attn: Wendy Jackson, Department of Occupational and Environmental Health, College of Public Health, University of Iowa, 100 Oakdale Campus, 124 IREH, Iowa City, IA 52242-5000, USA.

Our department is committed to increasing faculty diversity. The University of Iowa is an equal opportunity and affirmative action employer. We strongly encourage women and minorities to apply.