There Is Life (and Death) Beyond the Infant Year:
North Carolina's Recent Experience in Reducing Child Deaths

Tom Vitaglione, MPH

The 1990s witnessed a significant reduction in infant mortality in North Carolina, and this success has continued into the new millennium. For several years this success was guided by the NC Governor's Council on the Reduction of Infant Mortality, established in response to the dreadful news that the state had experienced the worst infant mortality rate in the nation in 1988.

Traditionally, the infant mortality rate has been considered a key indicator of the overall status of children within a society. Thus, it deservedly receives significant attention in public policy-making and in the media. Interestingly, the death rate of children after their first birthday receives less attention, perhaps because there are fewer of them (in 2001, for example, there were 1,005 infant deaths in NC and 524 deaths in children ages 1-17), or perhaps because the loss of an infant engenders a greater sense of tragedy. Nevertheless, an important measure of a society is the protection it affords its most vulnerable citizens, and especially its children of all ages.

This brief article is thus focused on North Carolina's experience in reducing death rates in children ages 1-17 in the period 1991-2001, a period in which the infant mortality rate declined by 22%. What progress did North Carolina make with regard to older children, and how did this progress occur?

Introduction

The road to progress in reducing deaths in older children began much the same way it began for infants: with bad news.

In 1991, a series of child abuse homicides in North Carolina received wide publicity. Data reviews indicated that this was an all too common phenomenon. Further reflection revealed concerns about all child deaths in the state. A few years earlier, North Carolina had achieved the distinction of having the worst infant death rate in the nation. It was now becoming apparent that, while the state's ranking in overall child deaths was not that bad, preventable child deaths were a tragically large problem.

As a response, the NC General Assembly held hearings on child abuse homicide, and interest grew in having an ongoing study of its cause and possible prevention. The interest then expanded to cover all child deaths, culminating in a watershed legislative decision to adopt an initiative known informally as the "child fatality prevention system."

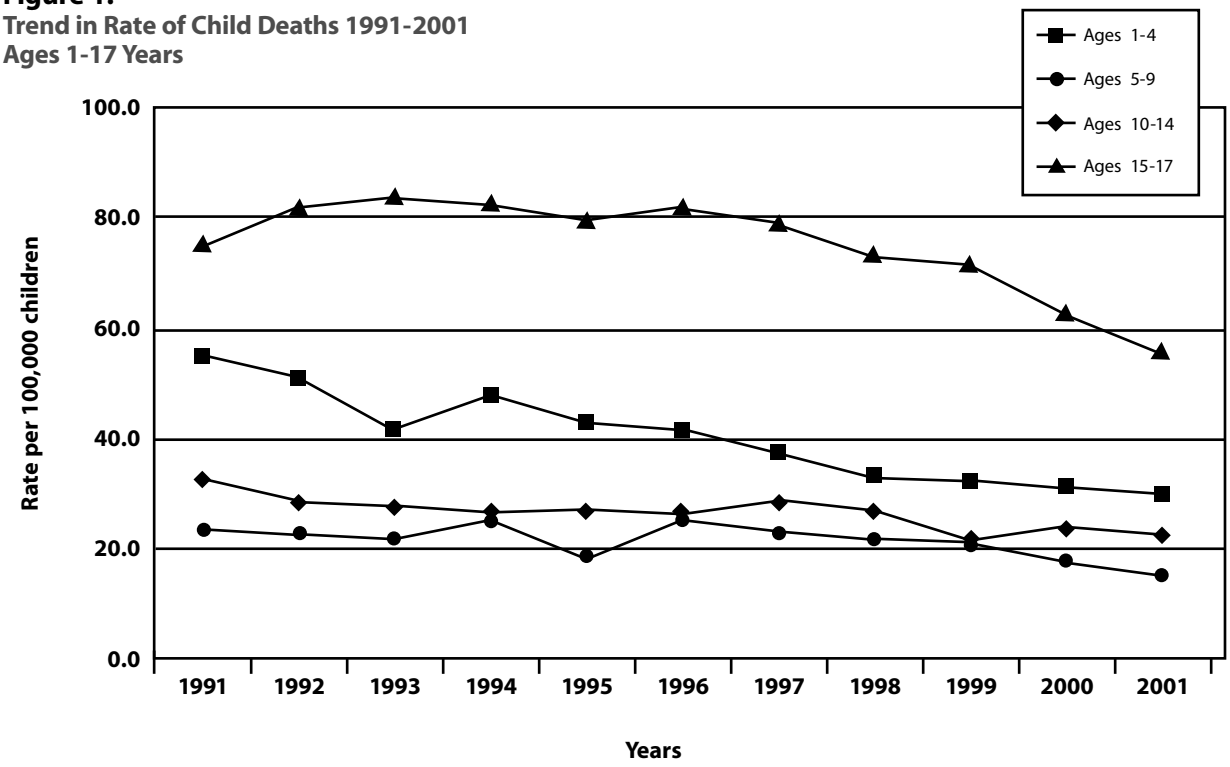
The Child Fatality Prevention System

Three critically important components of the child fatality prevention system were established:

- Local Child Fatality Prevention Teams, with multi-agency membership established by statute, were directed to review all child deaths in each county. (A prior Executive Order had established similar teams to focus exclusively on deaths suspected to have resulted from abuse or neglect. Under the new legislation, counties were given the option of combining these teams or operating them separately.) Teams make recommendations to change local procedures, policies and ordinances aimed at preventing future deaths. Recommendations with statewide ramifications can be referred to the other components of the prevention system described below.
- A State Child Fatality Review Team, with statutory multi-agency membership and chaired by the Chief Medical Examiner, was directed to assist in the review of unexplained, unexpected child deaths, with particular focus on those suspected to be the result of abuse or neglect. Once again, the purpose of the reviews is to develop recommendations that could prevent future child deaths. The State Team is specifically required to report its findings and its recommendations to the Child Fatality Task Force described below.
- The NC Child Fatality Task Force is the lynchpin of the entire system. It is a 37-member legislative study commission, including legislators and multi-agency membership, with the overall charge to study the incidence and causes of child deaths, as well as to make recommendations for changes in legislation, rules and policies that would prevent deaths and promote the safety and well-being of children. It is responsible for assuring that multidisciplinary reviews of child deaths

Tom Vitaglione, MPH, is a Senior Fellow at the NC Child Advocacy Institute. He can be reached at tom@ncchild.org or at 311 Edenton Street, Raleigh, NC 27601-1017. Telephone: 919-834-6623.

Figure 1.
Trend in Rate of Child Deaths 1991-2001
Ages 1-17 Years



are taking place, and is also responsible for assuring that, as noted above, local and state recommendations to reduce child deaths are studied and transmitted to state agencies and the NC General Assembly.

A Decade of Activity

All three components of the child fatality prevention system have been very active since inception. Though virtually the entire system is volunteer-based, the objective of saving children's lives and promoting their well-being stimulates a high degree of participation.

It is not possible to document all of the many accomplishments of local teams in changing local procedures, policies and ordinances. Changes in medical referral systems and emergency responses, heightened collaboration among child-caring agencies, street signs and traffic signals at hazardous intersections, and swimming pool safety ordinances are just some of the highlights that have made a difference in protecting children. In addition, many problems noted locally were referred to the State Review Team and the Child Fatality Task Force for review and action.

Because it operates in a more public venue and focuses on fewer, but more far-reaching issues, the activities and legislative accomplishments of the Task Force are more easily recounted. Since even these accomplishments would create a very lengthy list, below is a non-exhaustive list of highlights:

- Child passenger safety laws were strengthened twice.
- A Graduated Drivers License System was adopted.
- Smoke detectors are now required in all rental property.
- The sale of fireworks to youth under age 17 is now prohibited.
- "Zero tolerance" for alcohol in drivers less than 21 was adopted.
- Comprehensive kindergarten health screening is now required statewide.
- Numerous measures were adopted to reduce infant mortality, including expansion of Medicaid services for pregnant women and infants, a birth defects monitoring system, a folic acid awareness campaign, "safe sleep" practices in child care facilities, and overall awareness efforts under the auspices of the Healthy Start Foundation.
- Bicycle helmets for riders less than 16 are now required.
- The Infant Homicide Prevention Act, providing a "safe haven" for abandoned infants, was adopted.
- The penalty for illegally selling firearms to a minor was changed from a misdemeanor to a felony. In addition, safe storage of firearms is now required in homes where children reside.
- NC General Statutes, Chapter 7A was re-written to strengthen the protective services system.
- State funds for additional child protective services workers were appropriated at least twice.
- Protective services "hot lines' were established in each county.
- Additional funds were appropriated for the medical evaluation of children suspected to have been abused.

The Outcomes

All of the above, as well as all of the local efforts, were intended to reduce child deaths in North Carolina. As the child fatality prevention system reached its tenth birthday in 2001, some remarkably good news was reported in this regard.

Figure 1 depicts the steady decline in the child death rate for each age group since 1991.

Table 1 compares the percentage decline in death rates in the period 1991-2001 for each age group, including infants. The percentage decline in each of the older age groups exceeded that for infants, producing a remarkable overall decline of 28% for all groups birth through age 17 combined.

Table 1.
Death Rates By Age

Age	Death Rate*		% Change
	1991	2001	
Infant	10.9	8.5	**- 22%**
1-4	54.0	30.1	**- 44%**
5-9	22.8	15.0	**- 34%**
10-14	32.8	21.7	**- 34%**
15-17	74.9	57.6	**- 23%**
Overall	107.0	76.4	**- 28%**

* For infants, the death rate is the number of deaths per 1,000 live births. For all other groups, the death rate is the number of deaths per 100,000 children.

Table 2 depicts another startling outcome. For each and every major category of death, there was a substantial decline in the death rate in the period 1991-2001. (Beyond the infant year, injuries in their various forms are by far the leading causes of death.)

Discussion

The data depicted in the figure and tables taken together, are a firm indication that the remarkably good news about the decline in North Carolina's child death rate is not the result of happenstance. The overall decline has been steady and significant, the declines were enjoyed by all age groups, and the declines occurred in all cause of death categories.

It would not be scientifically accurate to conclude that the implementation of the child fatality prevention system in 1991 is solely responsible for the ten-year decline in child death rates. However, considering all the state and local activity generated by this system, it must surely be highly correlated with the positive outcomes.

North Carolina's success in reducing death rates for both infants and older children offers some interesting comparisons.

First, enhanced attention to both areas (with concomitant attraction of resources) was the result of media coverage. For infant deaths, it was the coverage of the state's last place national showing; for older children, it was coverage of a series of child abuse homicides. The state's infant and child death rates had not been previously ignored by public health officials, and proposals to reduce those rates had frequently been made. It took media coverage, however, to create a political environment that would entertain these proposals.

Second, the establishment of public commissions—the Governor's Council on the Reduction of Infant Mortality and the Child Fatality Task Force—was critical to the success of prevention efforts. Though these commissions have had neither administrative authority nor funding for services, they have exerted influence on the development and coordination of services. Perhaps most importantly, they have enhanced awareness of the critical issues, and have not been tethered by the administrative bureaucracy in advocating for solutions. (Note: The Governor's Council was dissolved in 1995, and its functions were undertaken by the Task Force.)

Third, the causes of death for infants and older children are quite dissimilar. Almost all infant deaths are attributable to birth defects, sudden infant death syndrome, and perinatal conditions related to low-birth weight and prematurity. Indeed, the underlying causes of many infant deaths are still not well understood. On the other hand, most deaths in older children are due to injuries, both intentional and unintentional. The specific causes of these deaths are well-understood.

Table 2.
Death Rates By Cause

Cause of Death	Percentage Change from 1991 - 2001 Children (1-17)
Birth Defects	- 25.6%
Perinatal Conditions	- 29.6%
SIDS	N/A
Illness	- 39.4%
Motor Vehicle	- 13.8%
Bicycle	- 61.3%
Fire	- 80.2%
Drowning	- 40.3%
Other Injuries	- 52.0%
Homicide	- 51.0%
Suicide	- 17.9%

Fourth, because of the differences in causes, the interventions-educational, medical and political-are also quite different. For infant deaths, interventions focus on education during the preconceptional, prenatal, and postpartum periods; access to prenatal care; and newborn intensive care. Interventions are

"Beyond age one, injuries in their various forms are by far the leading causes of death."

fairly costly, and political support is usually a function of awareness and the availability of public funds. For deaths in older children, interventions focus on injury prevention, which is largely a function of education to guide and/or change behaviors. These interventions are often at low or no public cost. However, legislation is often sought to reinforce educational/behavioral messages (e.g., the safe storage of guns, or requirements for bicycle helmets and smoke alarms). These proposals usually engender much political debate, for they are often viewed as an infringement on individual rights or on the rights of the family to make decisions on behalf of children.

An Invitation to Physicians

As noted above, most of the deaths in children beyond the infant year are not related directly to the provision of hands-on medical care. This does not mean, however, that physicians do not have a large role to play in reducing such deaths. Health education and behavior-risk counseling are the critical interventions needed at the child/family level, and advocacy is often needed at the state and community level to enhance child safety.

At both levels, physicians can use their expertise and their positions of respect to raise awareness of issues and to effect remedies that will enhance the health and safety of children and youth. Physicians are encouraged to become involved with the efforts of the local child fatality prevention team in their respective counties. (Information can be obtained from the local health department.)

While North Carolina's progress in reducing infant and child death rates has been remarkable, there is much more progress to be made. Physicians are invited to increase their participation in these efforts. **NCMJ**

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