An Assessment of the Risk of Preventable Deaths Among Children in Child Care in Georgia (2007-2009)[1]

by
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Introduction

The purpose of this study was to assess the risk of preventable death in child care settings for infants and young children (ages 1 to 4) and to compare the fatality rate for young children in child care settings to the fatality rate for young children in the general population. Every day parents in Georgia entrust their children to child care providers expecting that those children will be kept safe and appropriately nurtured and educated. Unfortunately, those parental expectations are not always met. Children do get injured while in child care; occasionally the injuries require medical services; and – very rarely – an infant or young child dies in out-of-home child care.

Infant (and Toddler) Mortality

Many infant – and some child – deaths are generally considered not preventable. Premature and low birth weight infants have a higher risk of death, and the death is likely to occur within the first month of life (Figure 1). In the years indicated in Figure 1, slightly over 50% of all infant deaths occurred within the first week of life (0 to 6 days, early neonatal). An additional 15% of infant deaths occurred during the next three weeks (7 to 27 days, late neonatal). Unintentional injuries, homicides, and deaths attributed to sudden infant death syndrome (SIDS) are potentially preventable deaths, and the majority of these deaths occur after the neonatal period.

[1] ***Notes on Study Time Frame***

Data from different time periods have been used in this study. The data on deaths in child care facilities were obtained from DECAL 2007 through 2009 Incident Reports and the Child Fatality Reports for the same time period. The death certificate data (used to identify all infant and toddler deaths) was not available for 2009, so the average annual number of deaths for the five-year period (2004 – 2008) was used as the numerator for the calculation of comparison rates (Table 2). Birth and population estimates for the 2007 through 2009 time period were available, so the average annual births and populations (used as the denominators for the rate calculations in Table 2) were based on that three-year period.

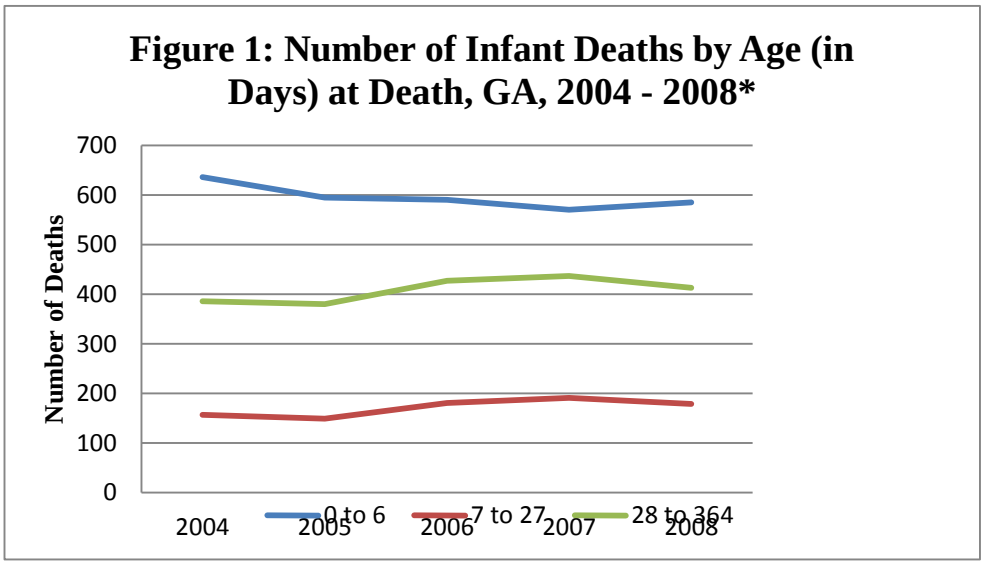

Table 1: Average Annual Deaths, by Selected Causes, GA, 2004 - 2008

	All Deaths	SIDS	External Causes	% Preventable
Post-Neonatal Infants	409	120	50	41.6
Toddlers (ages 1 - 4)	184		87	47.3

The leading cause of infant deaths was suffocation (suffocation in bed [86] and other suffocation [34]). Homicides (64) and motor vehicle incidents (43) were the second and third leading causes.

Data Sources

Infant and child deaths were identified from the Georgia death certificate data collected by the Vital Records Section of the Georgia Department of Public Health (DPH) with access provided through the DPH Office of Health Indicators for Planning (OHIP).

Population data (used to calculate toddler mortality rates) was obtained from the Online Analytical Statistical Information System (OASIS), a website (http://oasis.state.ga.us/) developed and maintained by OHIP. The annual number of live births (used to calculate SIDS mortality rates) was also obtained on OASIS.

Information on the location of infant/toddler deaths is available at the following sources:

1. The Georgia Department of Early Care and Learning (DECAL) monitors deaths and injuries requiring medical care in licensed or registered child care facilities. Data on these deaths and injuries are captured in a DECAL Incident Report. DECAL isolated reports on deaths from 2007 through 2009 and provided the contractor with an Excel list and paper files. The Rollins School of Public Health at Emory University abstracted the reports to provide adequate information to link death certificates and child fatality reviews.
2. The Office of Child Fatality Review (OCFR) of the Georgia Office of the Child Advocate reports annually on all "sudden and/or unexpected" child deaths. In practice, these deaths

include all deaths due to external causes, SIDS, and unknown causes. Each county is responsible for reviewing these "sudden and/or unexpected" deaths and submitting the results of the review to a national database. The OCFR and DECAL executed an agreement to share data on deaths occurring in child care facilities. (The OCFR data include a variable for place of death with values for licensed and unlicensed child care facilities and residential child care. It appears from the data that ambiguity exists in interpreting the "Residential Child Care" category. The allowed values changed slightly in the child death review [CDR] form implemented in 2009. The three new values are licensed child care center and licensed and unlicensed child care home.)

Case Finding

A "case" is defined as an infant/child death due to SIDS or an external cause identified by a DECAL incident report or child fatality review as having occurred in a child care setting. The period covered includes calendar years 2007 through 2009. Twenty-two deaths were identified by at least one source as having occurred in a child care setting. Eight deaths (seven of the eight are SIDS) were identified by DECAL incident reports and CFR reports; eight were identified by incident report, but there was no CFR report (these eight include two SIDS and two injuries); and six were identified by CFR reports, but there was no incident report (two each medical, injury, and SIDS).

Rate Calculations

Since the 2009 death certificate data was not available, comparison rates were calculated based on the average number of deaths for the 2004-2008 period (Table 1). The SIDS denominator is the average number of births over the three-year period 2007-2009 (146,200), and the external cause denominator is the average population ages 0 through 4 over the same period (743,053). The comparison (or baseline) rates are provided in Table 2. The rate calculations exclude neonatal deaths, so the rate calculations are conservative.

Table 2: Comparison Rate Calculation

	SIDS	External Causes
Avg. Annual Post-Neonatal Deaths	120	50
Avg. Deaths (1 - 4)		87
Avg. Number of Births	146,200	
Avg. Population 0 - 4		743,053
Mortality Rate (per 100,000)	82.1	18.4

The estimation of mortality rates for infants/toddlers in child care facilities requires determining appropriate denominators. The Georgia Child Care Economic Impact Study estimates the number of children under the age of two enrolled in day care (2008). Assuming a delay in the initial enrollment of an infant in child care, it is expected that more one-year-old children are in child care than infants. Pending enrollment data by individual year of age, it is estimated that only one-third of the birth through age one enrollees are less than age one. Children are in a child care facility approximately eight hours per day, five days a week; or only 40/24*7 (=24%) of the time. The estimated denominator for "child care exposure" per year is:

(# of birth through one year olds enrolled) * (proportion age less than one) * (proportion of time exposed) = 72,712 * .33 * .24 = 5,733 person-years

Eleven SIDS deaths were identified (from either the DECAL incident reports or the CFR) over a three-year period, so the rough estimate of the associated mortality rate for child care exposure is:

100,000 * 11 deaths / 3 * 5,733 = 64.0 SIDS/SUID deaths per 100,000 child care years

This rate is less than the calculated baseline rate (82.1), but the calculation was based on a small number of deaths. Because of uncertainties in case definitions for SIDS/SUID, the exposure estimate was based on older (2008) data for enrollments.

The number of injury-related deaths in child care facilities was so small that mortality rate calculations were not meaningful. If the injury mortality rate for children in facilities were the same as the population rate (18.1 per 100,000 person-years), an expected number of deaths (in child care facilities) can be calculated. The estimated child care enrollment (from the previously cited Georgia Child Care Economic Impact Study) for children birth through age four is 276,586. Using the prior assumption regarding average time exposed, then the "external cause child care exposure" is:

276,586 * .24 = 66,380 person-years

Our expected number of deaths, per year, is:

18.1 * 66,380 / 100,000 = 12

Only four identified external cause deaths occurred in child care settings during the three years 2007 – 2009.

Discussion

The death of an infant or toddler in a child care facility is a rare event. These deaths are identified through incident reports submitted by licensed or registered child care facilities to DECAL or by CFR teams in their reports on reviewed deaths. Twenty-two deaths were identified for the three-year period 2007 through 2009, or approximately seven deaths per year. Half (11) of the 22 identified deaths were attributed to SIDS/SUID; seven were determined to be associated with previously identified medical conditions; and four were injury related.

The determination of preventability of an infant/child death depends on the circumstances of the individual death, but the following summary provides generalizations for three categories for cause of death:

- SIDS/SUID deaths usually have identified risk factors and, therefore, might be considered preventable. Risk factors include prone sleeping position, soft bedding, sharing the sleeping surface, unsafe sleep surface (chair, sofa, adult bed), and tobacco smoke. The mortality rate calculations indicate that infants in child care have a slightly lower risk for SIDS (64.0 deaths per 100,000 child care exposure years) than the population rate (82.1 deaths per 100,000 infant population). However, the rate calculation for child care is based on a small number of deaths and involves debatable assumptions in the estimation of the "exposed population." Possible prevention activities include development/revision/enforcement of rules and regulations regarding acceptable sleep environments in child care facilities, training for child care providers, and public service announcements regarding "safe sleep" practices.
- Medical deaths are generally considered not preventable. CFR teams are not required to review deaths that occur where the child has an identified medical condition and is under the care of a physician. (Four of the seven identified medical deaths were not reviewed.) The child care setting appears irrelevant to these medical cause deaths, and the numbers are small related to total medical deaths, so rates are not calculated.
- Injury deaths in child care facilities are rare, but they are preventable. One of the four identified deaths was due to wedging of an infant between a bed and the wall (unsafe sleep), and the other three deaths occurred when toddlers were at play (unsafe environment or inadequate supervision). Given the assumptions regarding the number of children in child care and the

time spent in care, about 12 children per year would be expected to die in child care from injury-related events. Only four deaths were identified in a three-year period, so the risk appears much lower for children in day care facilities. Efforts to prevent injury deaths should address safe (child proof) environments and appropriate supervision.

Conclusions

This report supports the following conclusions concerning the risk of preventable death in child care facilities. Deaths were grouped into three categories – SIDS, injury (external causes), and medical.

- An **infant in child care has a slightly lower risk of SIDS** than the total population rate, but SIDS is the major cause of death associated with child care.
- The **risk for an injury (preventable) death is much lower for an infant or toddler in child care** than for a child in the total child population.
- Whether or not the child is in child care has **no direct bearing on infant or toddler deaths when identified medical conditions exist**.