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Child Fire-Related Mortality — Alaska 2005–2011

Background

Among all Alaska child injury deaths during 2005–2009, unintentional fire or burn was the fourth leading mechanism of death, following motor vehicle accident, drowning, and homicide by a firearm.¹ During the same time period, 46 children aged 0–14 years were admitted to the hospital for 24 hours or more because of fire-related injuries.² In 2011, the Alaska Department of Public Safety, Division of Fire and Life Safety collaborated with the Alaska Division of Public Health, Maternal-Infant Mortality and Child Death Review (MIMR-CDR) on reviews of all infant and child fire-related deaths.

Methods

MIMR-CDR coordinates ongoing expert committee reviews to evaluate the circumstances surrounding Alaska child deaths and make prevention recommendations.³ In October 2011, the committee completed reviews of medical records, autopsy reports, police reports, and fire investigation reports for 16 of the 17 known fire-related child deaths occurring in Alaska during 2005–2011. Trends in fire-related mortality rates during 1980–2010 were analyzed using death certificate data provided by the Bureau of Vital Statistics. P-values for trend were calculated using Joinpoint software.

Results

During 1980–1984 through 1992–1996, 5-year moving average mortality rates for Alaska children aged 0–14 years hovered around 4.0 deaths per 100,000 children per year (Figure). Subsequently, the rate declined substantially to 0.5 per 100,000 children from 1992–1996 through 2001–2005 ($p < 0.01$ for trend), and then increased to the most recent rate of 1.8 per 100,000 in 2006–2010 ($p < 0.01$ for trend).

The 16 deaths reviewed occurred as a result of 12 fire events. Of the 12 events, nine (75%) occurred during winter months (November–March), and the remainder were in spring (April–June). Eight (66%) events were in urban communities on the road system (including Anchorage, Mat-Su Valley, Kenai Peninsula, and Fairbanks), two were in rural communities on the road system and two were in rural communities off the road system. Six (50%) of the dwellings were rental properties. The ignition sources included heating stoves (2), cigarettes or cigars (2), cooking stoves (2), matches (1), and unknown (5). Seven dwellings had smoke detectors, but the detector was not functioning properly or missing batteries in four of the dwellings (one of which was a rental property); three had no smoke detector (two of which were rental properties). It was unknown if smoke detectors were present in two of the dwellings.

The MIMR-CDR committee determined that substance use by someone other than the deceased child definitely contributed to four of the 16 deaths, probably contributed to one, and possibly contributed to one. Negligence by a caregiver or other adult, such as dismantling a smoke detector or not

disposing of a cigarette safely, definitely contributed to nine deaths, and probably contributed to two. In total, lack of a working smoke detector, adult negligence, or adult substance use were determined to have definitely or probably contributed to 11 (92%) of the 12 fire events.

Discussion

The decline in child fire-related mortality in Alaska during the 1990s was similar to the national trend.⁴ Factors that influenced this decline likely included a national program that provided free smoke detectors and education throughout Alaska from 1996 through September 2011, and the adoption in 1994 of standards by the U.S. Consumer Product Safety Commission for child-resistant lighters. The rise in child fire-related mortality rates in Alaska since 2001–2005 is concerning, and underscores that increased prevention efforts are needed.

The presence of a working smoke detector is the single most important factor in reducing fire fatalities,⁴ and is required in all Alaska dwellings by Alaska Statute 18.70.095. Substance use is frequently associated with fire mortality and careless smoking while drinking alcohol is the most common cause of all fire deaths in Alaska.⁵ Additional prevention strategies include educating children about home fire escape plans and educating parents about fire safety. Information about smoke alarm installation programs in Alaska is available from the Division of Fire and Life Safety (call 907-746-5062 or email mahlon.greene@alaska.gov).

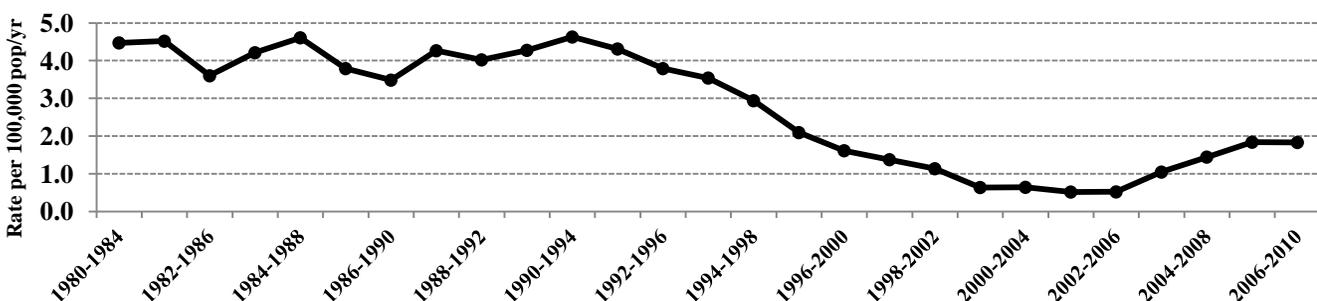
Recommendations

1. Health care providers should inform patients that their homes should have working smoke detectors on every floor and in every bedroom. Detectors should be tested monthly, batteries should be replaced annually, and detectors should be replaced every 10 years.
2. Health care providers caring for children should provide age-specific counseling guidance on fire safety. Handouts are available at: <http://www2.aap.org/family/TIPPGuide.pdf>
3. Health care providers conducting home visits with parents, such as nurse home visitors for first-time mothers, should evaluate and discuss fire safety.

References

1. CDC. Web-based Injury Statistics Query and Reporting System. Available at: <http://www.cdc.gov/injury/wisqars/>
2. State of Alaska Trauma Registry. Available at: <http://www.hss.state.ak.us/dph/emergency/trauma/>
3. Alaska MIMR-CDR Annual Report 2010: Reviews of Child Deaths 2004–2006. Available at: <http://www.epi.alaska.gov/mcheipi/>
4. National MCH Center for Child Death Review. Fires Fact Sheet. Available at: <http://www.childdeathreview.org/causesF.htm>
5. Alaska Department of Public Safety, Division of Fire and Life Safety. Available at: <http://dps.alaska.gov/Fire/TEB/publicfireeducation.aspx>

Figure. 5-year Moving Average Rates of Fire Mortality among Children Aged 0–14 Years — Alaska, 1980–2010



(Contributed by Margaret Young, MPH, Section of Women's, Children's, and Family Health.)