Michigan

The Burden of Sudden Cardiac Death (SCD)

Public Health Issue

Sudden cardiac death (SCD) is defined as an unexpected sudden death due to a cardiac cause and occurring within one hour of the onset of symptoms in an individual who had been in his/her usual state of health, without any known life-threatening condition. SCD can be especially devastating when it occurs in children, youth, or young adults in the prime of life who were previously thought to have been in good health. The Michigan Department of Community Health (MDCH) Genomics Program has identified sudden cardiac or unexplained death of the young (under age 30) as a potentially preventable condition, due to the heritable nature of certain cardiac disorders. Specific causes of SCD in younger adults and children are more likely to have genetic determinants than similar conditions in older persons. These include etiologies such as inherited arrhythmias, hypertrophic cardiomyopathy, undetected congenital heart defects, and early atherosclerotic heart disease.

Program Example

In an effort to learn more about the burden of SCD of the young in Michigan, the MDCH Genomics Program, in collaboration with MDCH Cardiovascular Health Section and Michigan State University, initiated a pilot mortality review system in early summer 2007. The goal of this project is to reduce the burden of SCD of the young in Michigan by identifying health care system changes and family-based interventions for increasing awareness and prevention among individuals at increased risk. The mortality review system utilizes multiple avenues to gather information; mortality data are obtained from MDCH Division for Vital Records and Health Statistics. The SCD case definition includes decedents who were Michigan residents, aged 1-29 years, who died outside of the hospital or in an emergency department, and had specific cardiac or ill-defined causes of death recorded as the underlying cause of death on their death certificate.

For select cases who died between October 2006 and March 2007, medical records for the day of death and for the year prior to death were requested from providers and health care facilities. Selected decedents' next-of-kin were contacted and asked to participate in an interview regarding the events surrounding the death. Four anonymized case summaries were prepared and an advisory panel of 13 members, with varied genetics, cardiac, and medical expertise, was convened in October 2007 to review the cases and provide feedback on the etiologic nature of the deaths, implications for family members, and the mortality review process.

Implications and Impact

In 2006, a total of 83 deaths met the SCD case definition, translating to an estimated mortality rate of 2.1 per 100,000 for individuals 1-29 years of age. Black men were disproportionately affected. Almost one-third of the total cases died of cardiomyopathy. About half of the total cases died in an emergency department, while the other half died elsewhere. The SCD advisory panel found several implications for immediate family members of three out of the four cases that were reviewed during the panel meeting. Recommendations made by the advisory panel will be used to modify the case definition, improve the review process, and guide ongoing efforts to develop evidence-based public health recommendations for preventing SCD of the young in Michigan. This project is expected to increase knowledge of factors that contribute to SCD and feasibility of using mortality data to identify family, public, and provider needs regarding SCD.