

## ECG Screening Backgrounder

The American Academy of Pediatrics (AAP) recently updated its [guidelines](#) to combat Sudden Death in the Young (SDY) with a recommendation that all youth be regularly screened for heart issues regardless of their level of physical activity or participation in sports programs.

Sudden cardiac death risk assessment has been added to the [Bright Futures Periodicity Schedule](#)—the first time the schedule has addressed preventative care to identify heart abnormalities that can lead to sudden cardiac arrest (SCA). A heart screening is now recommended every three years, especially upon entry to middle, junior and high school, with the onus put on practitioners to dialogue with patients about warning signs and risk factors.

While the AAP SDY guidelines are a step forward in preventing needless deaths, the recommendations indicate electrocardiogram (ECG) testing to evaluate presenting symptoms or risk factors. Studies show that about half of youth stricken by sudden cardiac arrest had such warning signs—**which means that half of youth stricken are asymptomatic and would therefore not be afforded ECG testing, thus missing a potential cardiac abnormality.** This is significant, given on average 1 in 300 youth is living with a heart condition that puts them at risk, and ECG testing can identify up to 70% of such conditions. [Studies](#) repeatedly show that ECG in addition to physical and history (P&H) find significantly more youth at risk than P&H alone.

P&H is current protocol in standard exams, which have been shown to **miss up to 90% of youth at risk.** This is likely attributed to the fact that the AAP recognized in their 2012 policy statement on [Pediatric Sudden Cardiac Arrest](#) that at-risk signals for SCA are often missed by patients and medical personnel alike. So, a major factor in preventing SCA and sudden death in youth is educating young people and their parents about warning signs and risk factors to affect a lifelong ability to advocate for themselves.

The gold standard [International Criteria for ECG Interpretation](#) affects [less than a ~2% false positive rate](#) – less than mammograms (typically 7-12% and up to 50-60% as reported by [Susan G. Komen Foundation](#)), which is an established preventative screening standard.

ECG screening as part of youth preventative care has become a national movement, most recently evidenced by President Biden signing into the 2022 National Defense Appropriations Act ECG pilot programs for incoming cadets at military academies.

Likewise, the Cardiac Safety Research Consortium is conducting the FDA funded *Prevention of Sudden Cardiac Death in the Young (SCDY) National Cardiac Screening Warehouse Pilot Study* to address this unmet public health need by assessing preventative ECG evaluation of youth.

Globally, a January 2022 [study](#) out of Japan recommends a school-based screening program for early identification of cardiac abnormalities, and a February 2022 [study](#) out of Switzerland recommends standardized ECG testing of youth. A [Canadian](#) study shows ECGs are the most effective tool to identify youth at risk for SCA with the lowest false positive rate. Famously, a 1982 Italian [mandate](#) for ECG screening in high school athletes led to a ~90% reduction in SCD.

National Emergency Medical Services Information System data estimates [23,000](#) youth are lost to sudden cardiac arrest each year. As a point of comparison, the American Cancer Society reports an estimated [540](#) cancer deaths in the 15–19 age group annually, with the American Society of Clinical Oncology estimating [1,050](#) cancer deaths in children under 15. The National Safety Council reports [7,300](#) motor vehicle fatalities in 2019 in youth under 25. The CDC reports [6,643](#) suicides in the 10 – 24 age group and in a 2016 study [650+](#) opioid deaths in children and adolescents age 0 to 19. The CDC reported [4,368](#) child deaths by gunfire in 2020. In 2022 there were at least 95 incidents of gunfire on school grounds, resulting in [40 deaths](#) and 76 injuries nationally. When this data is juxtaposed against fatal heart conditions, clearly, sudden cardiac arrest warrants priority consideration. And unlike the majority of tragedies that befall our youth (accidents, suicide, homicide, cancer and heart conditions), SCA is arguably the one that can easily and economically be *prevented*—and that's through early detection heart screening.