FOR RELEASE:
4 p.m. EDT, Monday
June 30, 2003

***American Heart Association scientific statement:***

# American Heart Association says AEDs safe to use on children ages 1 to 8

DALLAS, July 1 – Automated external defibrillators (AEDs) – devices that shock the heart to restore a normal heartbeat after a life-threatening irregular rhythm – are safe for children as young as age 1, according to an American Heart Association scientific statement published today in *Circulation: Journal of the American Heart Association.*

"AEDs are the first line of treatment for cardiac arrests in adults. Until recently, they were only approved for people age 8 and older," says Ricardo Samson, M.D., associate professor of pediatrics, University of Arizona, Tucson, and lead author of the statement. Prior to this statement, children under age 8 could receive manual defibrillation at a hospital but were excluded from the automated machines designed for use by emergency personnel, or even lay responders outside of a hospital.

"Typically, a child in cardiac arrest would have to wait for experienced medical personnel to evaluate if the rhythm required a shock," he says. "What has been shown in adults is that the earlier they receive a shock, the greater the chances of survival. For every minute that defibrillation is delayed, survival decreases by 7 percent to 10 percent. If it's delayed by more than 12 minutes, the chance of survival in adults is less than 5 percent."

There is no specific data, but pediatric cardiac arrests occur much less often than adult cardiac arrests, Samson says. "But in those cases where it's necessary, AEDs can save a young person's life. Extending their use to younger children may mean more children's lives may be saved."

Ventricular fibrillation is an extremely fast and chaotic heart rhythm during which the heart's lower chambers (ventricles) quiver and don't pump any blood. AEDs diagnose heart rhythms, differentiating those that need a defibrillating shock from those that don't. The devices can be operated by bystanders or emergency responders such as paramedics or police officers.

AEDs were originally designed for adults, but they now have been shown to also accurately diagnose a child's heart rhythm. Some AED manufacturers now offer pediatric-sized electrode pads with cables that reduce the adult-size shock to a level more suitable to children 1 to 8.

"With that information, we are issuing the statement that AEDs can now be used on children with no signs of circulation as young as 1 year of age," Samson says.

However, even an AED without pediatric electrode pads can be used on children 1 and older

Authors of the statement include pediatric specialists in intensive care, cardiology and anesthesia. Their review of the literature on AED use in children also reaffirms previous recommendations that:

- there is insufficient evidence to suggest that AEDs be used in children younger than age 1;
- rescuers working alone should first try a minute of cardiopulmonary resuscitation (CPR) before any other action on children, because some unconscious children may be revived by rescue breaths alone if they are not suffering a cardiac problem; and
- defibrillation is recommended for documented ventricular fibrillation.

There is a widespread misconception that smaller children should get proportionately lower shock doses. But the research suggests that children might need higher doses than what was previously thought for effective defibrillation, Samson says. More research is needed to determine the optimum dose in children, he says.

"We encourage manufacturers to test their rhythm detection software in their AEDs against 'libraries' of previously recorded pediatric rhythms. That provides information on the device's accuracy for determining if a shock should be delivered to a child or not," he says.

AEDs are often available in public places where large numbers of people might gather such as airports, theaters, casinos and sports stadiums. People trained to use them can include non-medical personnel who have been designated to respond with the devices should someone collapse.

"It's important that more people are trained in CPR and AED use. Site-specific response plans must also be in place to ensure that an AED gets to the victim," Samson says. "There have been situations reported where an AED was available but a child died because there was no one trained to retrieve and use the device."

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The statement will also published in *Pediatrics* and *Resuscitation*.

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NR03-1098 (Circ/Samson)