Top Ten Things To Know
Air Pollution and Cardiovascular Disease (CVD)

1. The 2004 AHA Scientific Statement on Air Pollution and CVD concluded that “exposure to particulate matter (PM) air pollution contributes to cardiovascular morbidity and mortality.”

2. This update to the 2004 statement provides a review of new evidence and expert consensus opinions on the links of PM exposure to CVD. The goal is to highlight the implications to health and for the clinical setting from the newer information and to offer risk and exposure reduction recommendations.

3. Particulate matter in the atmosphere is characterized by size (does not include gaseous air pollutants):
   - <10 μm (thoracic particles [PM 10]),
   - < 2.5 μm (fine particles [PM 2.5]) – come primarily from burning of fossil fuels in traffic, by industry and in power generation.
   - <0.1 μm (ultra fine particles, UFP),
   - 2.0-10 μm (coarse particles [PM 2.5-10])

4. CVD morbidity and mortality is increased by short-term (days to hours) and long-term exposure to PM 2.5.
   - Increasing the 24-hour PM 2.5 exposure by a concentration of 10 μg/m^3 can increase the relative risk for CV death by 0.4%-1.0%. In the U.S., “tens of thousands” of people a year die prematurely because of increased short-term exposure.
   - For long-term exposure, the World Health Organization has estimated over 800,000 deaths annually result from elevated exposure to PM 2.5. It ranks #13 worldwide as a cause of mortality.

5. Short-term exposures (days to hours) can increase the risk for myocardial infarction (MI), stroke, arrhythmias and heart failure (HF) in susceptible people (elderly, preexisting, unrecognized coronary artery disease, and structural heart problems)

6. CV mortality risk from long-term exposure to PM 2.5 is greater than for short-term exposures, and absolute mortality rates for CVD is greater than for pulmonary diseases for short- and long-term PM exposures.

7. Current science suggests that air pollution can facilitate atherosclerosis development and progression and potentially play a role in hypertension, heart failure and diabetes.

8. There is no safe level of PM 2.5.

9. Precautionary approaches suggested include evidence-based CVD treatment, patient awareness of risks, information resources, Air Quality Index awareness, and reduction of exposures to polluted areas areas.

10. This scientific statement presents a summary of the current evidence and supports a causal link between PM 2.5 exposure and death and morbidity from CVD. PM 2.5 exposure is considered to be a modifiable risk factor, affecting global public health.