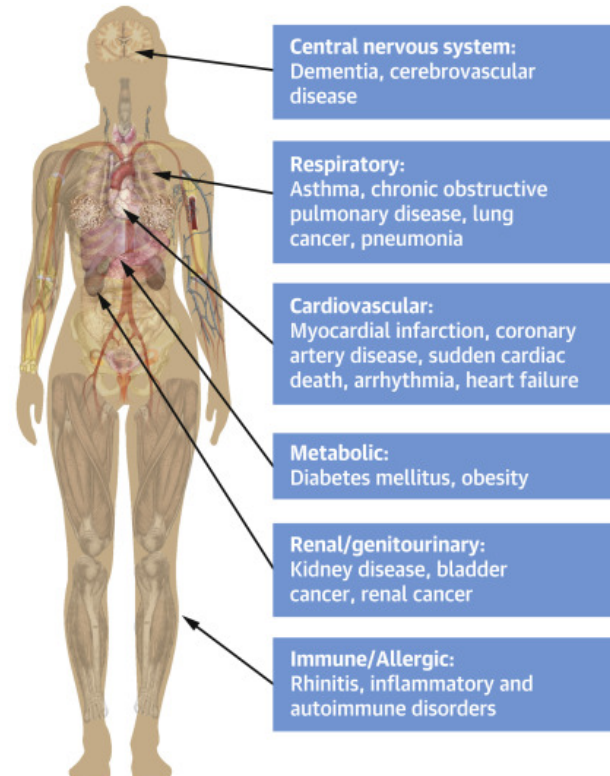




Newman et al. (23 authors). 2020. Cardiopulmonary impact of particulate air pollution in high-risk populations. *Journal of the American College of Cardiology*, **26**, 2878-2894.

**Abstract**

Fine particulate air pollution <math><2.5\ \mu\text{m}</math> in diameter (PM<sub>2.5</sub>) is a major environmental threat to global public health. Multiple national and international medical and governmental organizations have recognized PM<sub>2.5</sub> as a risk factor for cardiopulmonary diseases. A growing body of evidence indicates that several personal-level approaches that reduce exposures to PM<sub>2.5</sub> can lead to improvements in health endpoints. Novel and forward-thinking strategies including randomized clinical trials are important to validate key aspects (e.g., feasibility, efficacy, health benefits, risks, burden, costs) of the various protective interventions, in particular among real-world susceptible and vulnerable populations. This paper summarizes the discussions and conclusions from an expert workshop, *Reducing the Cardiopulmonary Impact of Particulate Matter Air Pollution in High Risk Populations*, held on May 29 to 30, 2019, and convened by the National Institutes of Health, the U.S. Environmental Protection Agency, and the U.S. Centers for Disease Control and Prevention.



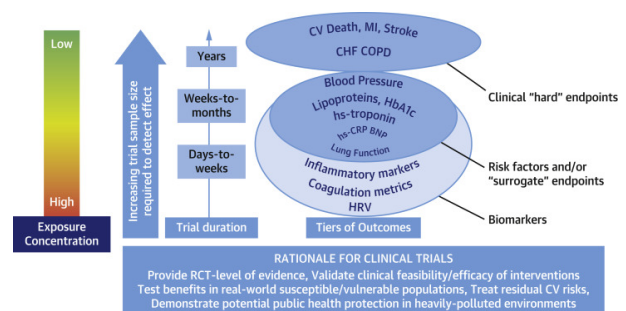
**Central Illustration**

**CENTRAL ILLUSTRATION: Burden, Strategies, and Needs to Address the Cardiovascular Effects of Exposure to Fine Particulate Air Pollution**

	<p><b>Problem</b></p> <ul style="list-style-type: none"> <li>PM<sub>2.5</sub> kills 9 million people annually worldwide</li> <li>Greatest morbidity and mortality from PM<sub>2.5</sub> exposure due to CVD</li> </ul>
	<p><b>Threat</b></p> <ul style="list-style-type: none"> <li>While PM<sub>2.5</sub> has improved in some parts of the world, global PM<sub>2.5</sub> is increasing</li> </ul>
	<p><b>Opportunity</b></p> <ul style="list-style-type: none"> <li>Early data with use of air cleaners and facemasks supports potential benefit on CV risk factors and surrogates</li> </ul>
	<p><b>Intervention</b></p> <ul style="list-style-type: none"> <li>Randomized clinical trials of PM<sub>2.5</sub> intervention needed to demonstrate efficacy and effectiveness</li> </ul>
	<p><b>Policy</b></p> <ul style="list-style-type: none"> <li>Benefit for improved CV outcomes or CV risk factors might influence clinical guidelines</li> </ul>

Newman, J.D. et al. *J Am Coll Cardiol*. 2020;76(24):2878-94.

**Figure 1.** Subset of diseases associated with fine particulate air pollution by organ system. This figure compiles data from multiple observational and retrospective studies to show the heterogeneity of diseases associated with fine particulate air pollution exposure.



**Figure 3.** Potential design aspects of clinical trials

Please see the article for details on support and author disclosures.

