Welcome to the webinar!
We’ll begin momentarily
NEHA is:

• 4,800 members
• 7 credentials and 6,200 credential holders in all 50 states and 2 territories
• 80 years of JEH publication, distributed to over 6,000 individuals
• Over 3,500 professionals trained through webinars
• Over 200 educational sessions at the AEC
2018 NEHA AEC & EXPO
AND HUD HEALTHY HOMES CONFERENCE

Hundreds of educational sessions on relevant and emerging EH issues

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neha.org/news-events/aec-annual-educational-conference-0/register

NEHA 2018 AEC and HUD Healthy Homes Conference
Anaheim • California • June 25-28, 2018
Air Pollution and Cardiovascular Health

Wayne Cascio MD, FACC
Acting Director
National Health and Environmental Effects Research Laboratory
Office of Research and Development
US EPA

NEHA Webinar

Research Triangle Park, NC
February 28, 2018
In 2015 ambient PM$_{2.5}$ was the fifth-ranking global mortality risk factor -

*Exposure to PM$_{2.5}$ caused:*

- 4.2 million deaths
- 103.1 million disability-adjusted life-years (DALYs)

*Between 1990-2015 deaths increased in association with PM$_{2.5}$ from:*

- 3.5 million to 4.2 million

Ozone exposure contributed to morbidity and mortality -

*In 2015 ozone exposure is estimated to have accounted for:*

- 254,000 deaths
- 4.1 million DALYs from chronic obstructive pulmonary disease
Air Pollution Remains a Significant U.S. Public Health Concern

- Estimated excess mortality **125,000 deaths/year**
- Over **20 million school days and work days lost**
- Over **1 million life-years lost**
- **122.5 million people** living in counties with one or more pollutants exceeding the NAAQS in 2016
After the implementation of local, state, and federal air quality policies

- PM$_{2.5}$ precursor emissions declined over the course of several decades

Between 1980 - 2010, PM$_{2.5}$ exposures fell by about half, and estimated excess deaths decreased by about a third

- California, Virginia, New Jersey, and Georgia had some of the largest estimated reductions in PM$_{2.5}$-attributable deaths

Fann N, et al. Environmental Health Perspectives 2017
Air Pollution
Public Health Benefits of Decreasing PM$_{2.5}$ 1980-2010

Change in the % of Death Due to PM$_{2.5}$ Between 1980 - 2010

-2.85 – -0.04%
-0.03 – -0.01%
0.02  – 2.18%
2.19  – 3.01%
3.02  – 3.71%
3.72  – 4.37%
4.38  – 5.09%
5.10  – 6.07%
6.08  – 8.11%
8.12  – 11.7%

Relative to a hypothetical population with exposures held constant at 1980 levels

- people born in 2050 would live about 1 year longer
- there would be a cumulative gain of 4.4 million life years among adults ≥30 years of age

Fann N, et al. Environmental Health Perspectives 2017
Ambient Particulate Matter
Definitions and Composition

**Composition**
- Elemental carbon
- Organic carbon
- Metals
- Sulfates
- Nitrates

**Aerodynamic diameter**
- $<10 \, \mu m$ (PM$_{10}$)
- $<2.5 \, \mu m$ (PM$_{2.5}$)
Daily Variability of $PM_{10}$ & $PM_{2.5}$
Chapel Hill, NC 1995-96

Daily $PM_{2.5}$ changes (BLUE arrows)

**Short-term clinical events**
NAAQS = 35 µg/m$^3$

**Annual average $PM_{2.5}$** (YELLOW line)

**Long-term clinical events**
NAAQS 12 µg/m$^3$
What are the Facts?
Air Pollution and Population Health

Key Facts

• High attributable health burden
• Vulnerable populations are at higher risk
• Short-term exposure can trigger heart attack, stroke, arrhythmia and worsen heart failure
• No established threshold level for safe long-term exposure
• Mechanisms of health effects are now known
• Decreased long-term air pollutant exposures associated with improved cardiovascular outcomes

Giles LV et al. Environmental Health Perspectives 2011
### Personal Health Care Spending in U.S. for Chronic Disease is High

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD</td>
<td>$ 53.8 billion</td>
</tr>
<tr>
<td>Asthma</td>
<td>$ 32.5 billion</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>$ 37.1 billion</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>$ 13.1 billion</td>
</tr>
<tr>
<td>Ischemic heart disease</td>
<td>$ 88.1 billion</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>$ 83.9 billion</td>
</tr>
<tr>
<td>Stroke</td>
<td>$ 43.8 billion</td>
</tr>
<tr>
<td>Heart failure</td>
<td>$ 28.5 billion</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>$ 27.7 billion</td>
</tr>
<tr>
<td>Peripheral vascular disease</td>
<td>$ 2.7 billion</td>
</tr>
<tr>
<td>Diabetes</td>
<td>$101.4 billion</td>
</tr>
<tr>
<td>Preterm birth</td>
<td>$ 4.9 billion</td>
</tr>
</tbody>
</table>

½ Trillion Dollars in 2013

Air Pollutant Exposure is a Risk Factor in Each

Dieleman JL et al.  
*JAMA* 2016
Who is the most vulnerable?
Populations At-Risk from PM$_{2.5}$

**Susceptible populations include** –
- those with pre-existing cardiovascular disease
- those with pre-existing respiratory disease
- older adults
- those with lower socio-economic status
- children & the developing fetus

**Populations suspected to be at greater risk** –
- those with chronic inflammatory diseases (e.g., diabetes, obesity)
- those with specific genetic polymorphisms (e.g., GSTM1)
Health and Long-term Air Pollution Exposure
Association between PM and Coronary Artery Disease

1 μg/m³ increase in annual average PM$_{2.5}$ was associated with an:

- 11.1% relative increase in the odds of significant coronary artery disease
- 14.2% increase in the odds of having had a heart attack during the previous year

5,679 patients who underwent coronary angiography at Duke University between 2002–2009 and resided in North Carolina*

6,575 Ohio residents undergoing elective diagnostic coronary angiography**

1 μg/m³ increase in annual average PM$_{2.5}$ was associated with an:

- 17% relative increase in the odds of 1-2 vessel, and a 24% increase in ≥ 3 vessel coronary artery disease
- 14% increase in the odds of having a heart attack within 3 years

Air Pollution and Mortality
PM, Survival and Subsequent Clinical Events

Zanobetti A & Schwartz J.
Environ Health Perspect 2007
Mortality
CHF hospitalization
MI hospitalizations

Koton et al.
Prev Med 2013
MI, CHF, Stroke
Mortality

Tonne et al.
Eur Heart J 2013
Mortality

Tonne et al.
Int J Hyg Envir Health 2016
Mortality

Chen et al. EHP 2016
Environ Health Perspect 2016
Mortality
MI Mortality

Hazard Ratio (per 10µg/m³)

1.0 1.25 1.50 1.75 2.00 2.25 2.50

(PM_{10}, 21 U.S. cities, 1985-1999)
(PM_{2.5}, Israel, 1992-2005)
(PM_{2.5}, Israel, 1992-2011)
(PM_{2.5}, London, 2004-2010)
(PM_{10}, London, 2003-2010)
(PM_{2.5}, Ontario, 1999-2011)
Air pollution adversely affects:
- Health, Longevity, Healthcare Resource Utilization and Public Welfare (e.g. effects on visibility, vegetation, and ecosystems)

Most healthcare professionals & patients at-risk know of air pollution’s adverse health effects

Despite Knowledge of the Risks
the Healthcare System is Not Engaged

- Few healthcare professionals discuss the risks with their patients
- At-risk patients don’t take action to reduce exposure
Goal:
• Narrow the knowledge-gap of healthcare professionals and patients at higher risk from air pollution regarding the relationship between air pollution and cardiovascular health
• Promote health protective behaviors and the avoidance of air pollutant exposures on poor air quality days

Approach:
• Provide an environmental health information for patients who at high-risk for adverse cardiopulmonary outcomes from air pollutant exposure to limit exposure to PM
• Encourage adherence to primary and secondary preventions guidelines

Impact:
• Decrease vascular and arrhythmic events, improve overall cardiovascular health and wellbeing and lower healthcare resource utilization
Engaging the Public

Examples of Products

Particle Pollution and Your Patients' Health

This course is designed for family medicine physicians, internists, pediatricians, occupational and rehabilitation physicians, nurse practitioners, educational leaders, pulmonologists, cardiologists, and medical professionals.

Start the Course

Source developer

Contaminantes Comunes del Aire

Air Sensor Measure Learn Share

Current Location

The Air Quality Index (AQI) for Raleigh-Durham-Chapel Hill

Current
2/6/2013
8:02 PM EST
Pollutant: PM2.5
Current
2/6/2013
8:02 PM EST
Pollutant: OZONE

Good

40

Good

23

Did you know that air pollution can trigger heart attacks, stroke, and other health effects?

Medical studies show that air pollution can trigger heart attacks, stroke, and irregular heart rhythms—especially in people who are already at risk for these conditions. Also, for people with a medical condition called heart failure, air pollution can further reduce the ability of the heart to pump blood, the way that it should.

Fact sheet tells you how to...

How can you protect your health?

PROUD SUPPORTER

Working to prevent a million heart attacks and strokes

1

2
Thank you

Wayne E. Cascio, MD, FACC, FAHA
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ORD/U.S. Environmental Protection Agency
Email: cascio.wayne@epa.gov

No conflicts of interest
The presentation represents the opinions of the speaker and does not necessarily represent the policies of the US EPA
Air Quality Index and AirNow for Health Professionals

Susan Lyon Stone, MS
Senior Environmental Health Scientist
US EPA

National Environmental Health Association Webinar  February 28, 2018
<table>
<thead>
<tr>
<th>Category Descriptor</th>
<th>Index Value</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>0 to 50</td>
<td>Air quality is considered satisfactory, and air pollution poses little or no risk.</td>
</tr>
<tr>
<td>Moderate</td>
<td>51 to 100</td>
<td>Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.</td>
</tr>
<tr>
<td>Unhealthy for Sensitive Groups</td>
<td>101 to 150</td>
<td>Members of sensitive groups may experience health effects. The general public is not likely to be affected.</td>
</tr>
<tr>
<td>Unhealthy</td>
<td>151 to 200</td>
<td>Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.</td>
</tr>
<tr>
<td>Very Unhealthy</td>
<td>201 to 300</td>
<td>Health alert: everyone may experience more serious health effects.</td>
</tr>
<tr>
<td>Hazardous</td>
<td>301 to 500</td>
<td>Health warnings of emergency conditions. The entire population is more likely to be affected.</td>
</tr>
</tbody>
</table>
Air Quality Index

- Pollutant-specific health effects and cautionary statements address question “who will be affected”
- Based on health information supporting the National Ambient Air Quality Standards
  - Controlled human exposure, epidemiological studies exposure/risk assessments used to set breakpoints
  - Epidemiological studies useful for identifying risk factors and more serious effects
  - Controlled human exposure studies useful for identifying proportion of healthy population affected, symptoms, mechanisms of effects, genetic variability

How to use the AQI to lower the dose of inhaled pollution:

Dose = Concentration x Ventilation rate x Time

C - be active outdoors when air quality is better
V - take it easier when active outdoors
T - spend less time being active outdoors

Since people respond differently - PAY ATTENTION TO SYMPTOMS!
Particle Pollution and Your Patients’ Health

An evidence-based training course for healthcare providers that:

- Describes the biological mechanisms responsible for the cardiovascular and respiratory health effects associated with particle pollution exposure.
- Provides education tools to help patients understand how particle pollution exposure can affect their health and how they can use the Air Quality Index to protect their health.

This course is designed for family medicine physicians, internists, pediatricians, occupational and rehabilitation physicians, nurse practitioners, nurses, asthma educators, pulmonary specialists, cardiologists, and other medical professionals. 

Start the Course

Course developers

Contact Us to ask a question, provide feedback, or report a problem.

Offers CE credit from CDC to physicians, nurses and health educators
(https://www.epa.gov/pmcourse)
Particle Pollution and Your Patients’ Health is an evidence-based training course that:

- Describes the biological mechanisms responsible for the cardiovascular and respiratory health effects associated with particle pollution exposure
- Helps health-care providers advise their patients about particle pollution exposure
- Provides practical education tools to help patients understand how particle pollution exposure can affect their health and how they can use the Air Quality Index to protect their health

Particle Pollution and Your Patients’ Health is designed for family medicine physicians, internists, pediatricians, occupational and rehabilitation physicians, nurse practitioners, nurses, asthma educators, pulmonary specialists, cardiologists, and other medical professionals who counsel patients about lung, heart or vascular disease

Offers Continuing Education Credits to physicians, nurses, health educators

– Continuing education for clinicians is required for continued licensure in many states
Why a Course for Clinicians?

- Part of CDC’s Behavioral Risk Factor and Surveillance System of health related telephone surveys
  - In 2005 six states included questions about how environmental factors and the AQI affect people’s activity levels
  - The states: Colorado, Florida, Indiana, Kansas, Massachusetts, and Wisconsin

- Results highlights:
  - People with lifetime asthma were almost twice as likely to report a change in activity based on an air quality alert if they had been advised by a healthcare professional to do so (Wen XJ, Balluz L, Mokdad A. 2009. J Community Health. 34(1):40-6.)
  - People without asthma were than three times as likely to report such a change, if they had been advised by a healthcare professional to do so. (Wen et al., 2009)
  - In Kansas, people were almost four times as likely to change outdoor activity levels if they were advised by a healthcare professional.
  - BUT: only a small percentage of people in groups considered to be at increased risk from particle pollution reported that healthcare professionals had advised them to pay attention to the AQI. (Kansas Department of Health and Environment, 2006).
Particle Pollution and Your Patients’ Health Web Course

An extensive body of scientific evidence shows exposure to fine particle pollution may lead to a range of adverse health effects, including heart and lung effects, and even premature death. This course will provide health professionals with knowledge they can share with patients to help reduce overall risk of particle pollution-related health effects, particularly in individuals with heart and lung disease.

Cardiovascular effects of particle pollution: can cause a heart attack, irregular heartbeat, stroke, exacerbation of heart failure, and early death in people with heart disease.

Respiratory effects of particle pollution: can trigger an asthma attack, aggravate other lung diseases, and impact lung development in children.

https://www.airnow.gov/index.cfm?action=health_providers.index
Ozone Web Course for Healthcare Professionals

Ozone Pollution and Your Patients' Health

Ozone and Your Patients' Health: About this Course

Ozone and Your Patients' Health is designed for family practice doctors, pediatricians, nurse practitioners, asthma educators, and other medical professionals who counsel patients about asthma, air pollution, or exercise. Patients and their families may also use this material to learn the science behind ozone’s effect on respiration and how to manage their respiratory health using the Air Quality Index.

Course Objectives

Upon completion of this course, you will be able to:

- Describe how ozone is formed and where it is found
- Identify the effects that exposure to ozone has on the general population
- List the different effects of ozone at varying exposure concentrations and durations
- Identify the effects that ozone has on asthma patients
- Explain the purpose and use of the Air Quality Index
- Identify common sources of information about the Air Quality Index
- Address typical patient questions and clinical scenarios relating to ozone exposure

https://www.epa.gov/ozone-pollution-and-your-patients-health - Does not offer Continuing Education credits at this time
Downloadable Factsheets for Heart and Lung Disease
In English and Spanish

**Asthma and Outdoor Air Pollution**

1. Air pollution can make asthma symptoms worse and trigger attacks.
   - If you or your child has asthma, have you ever noticed symptoms get worse when the air is polluted? Air pollution can make it harder to breathe. It can also cause other symptoms, like coughing, wheezing, chest discomfort, and a burning feeling in the lungs.
   - Two key air pollutants can affect asthma: One is ozone (formed in smog). The other is particulate pollution (found in smoke, dust, and ash). When ozone and particle pollution are in the air, adults and children with asthma are more likely to have symptoms.

2. You can take steps to help protect your health from air pollution.
   - Get to know how sensitive you are to air pollution.
   - Notice asthma symptoms when you are physically active. Do they happen more often when the air is more polluted? If so, you may be sensitive to air pollution.
   - Also notice any asthma symptoms that begin up to a day after you have been outdoors in polluted air. Air pollution can make you more sensitive to asthma triggers like mold and dust mites. If you are more sensitive than usual to indoor asthma triggers, it could be due to air pollution outdoors.

**Heart Disease, Stroke, and Outdoor Air Pollution**

1. Did you know that air pollution can trigger heart attacks, stroke, and other health effects?
   - Medical studies show that air pollution can trigger heart attacks, stroke, and irregular heart rhythms—especially in people who are already at risk for these conditions. Also, for people with a medical condition called heart failure, air pollution can further reduce the ability of the heart to pump blood the way that it should. Very small particles are the pollutants of greatest concern for triggering these effects. Particle pollution is found in soot, smoke, dust, and sometimes in air that looks clean.
   - This fact sheet tells you how you can:
     - Get up-to-date information about your local air quality.
     - Protect your health when particle pollution is at unhealthy levels.

2. Are you at higher risk?
   - Older adults and people with risk factors for heart disease or stroke may be at greater risk. You are at greater risk if you:
     - Have had a heart attack, angina, bypass surgery, heart attack, or heart operation with or without a sting: a stroke, blockages in the neck or leg arteries, heart failure, heart rhythm problems, diabetes, or chronic obstructive lung disease.
   - You may be at greater risk of heart disease or stroke (and therefore at greater risk from particle pollution) if any of these apply:
     - You are a man 45 years or older, or a woman 55 years or older.
     - You have a family history of stroke or early heart disease (father or brother diagnosed before age 55, mother or sister diagnosed before age 60).
     - You have high blood pressure or high blood cholesterol.
     - You are overweight or not physically active.
     - You smoke cigarettes.

3. How can you protect your health?
   - Regular exercise is important for staying healthy, especially if you have heart disease. By adjusting when and where you exercise, you can lead a healthier lifestyle and help reduce your risk of heart problems or stroke triggered by air pollution. In addition:
     - If you have heart disease or have experienced a stroke, check with your health care provider about the best ways to protect your health when the air quality is unhealthy.
     - If you’re at risk of heart disease or stroke and plan to exercise near or unusual, discuss this with your health care provider.

   - Know when and where particle pollution levels may be unhealthy. Particle pollution levels can be high any time of year. Particle levels can also be high:
     - Near busy roads, in urban areas (especially in smoke areas), and in industrial areas.
     - When there is smoke in the air from wood stoves, fireplaces, burning vegetation, or forest fires.

https://www3.epa.gov/airnow/asthma-flyer.pdf
https://www3.epa.gov/airnow/heartflyer.pdf
Effects of Common Air Pollutants

Respiratory Effects:
- Symptoms:
  - Shortness of breath
  - Coughing
  - Wheezing
  - Nasal congestion
  - Itchy nose
  - Runny nose
  - Headaches
  - Sore throat
  - Sneezing
  - Sinus pain
- Increased sick days and premature death from:
  - Asthma
  - Chronic obstructive pulmonary disease (COPD)
  - Bronchitis
  - Pneumonia
  - Emphysema
  - Development of new disease
  - Cataracts
  - Acid reflux
  - Other respiratory infections

Cardiovascular Effects:
- Symptoms:
  - Chest pain
  - Tachycardia
  - Shortness of breath
  - Headaches
  - Stomach ache
  - Increased blood pressure
  - Increased likelihood of atrial fibrillation
  - Increased risk of heart attack
  - Increased risk of stroke
  - Increased risk of kidney disease
  - Increased risk of diabetes

How Pollutants Cause Symptoms:
- Airway Inflammation
  - Inflammation of the airway
  - Increased risk of asthma attacks
  - Decreased air flow
- Artery Stiffening
  - Decreased elasticity of the artery wall
  - Increased stiffness and premature death from:
  - Heart disease
  - Stroke
  - Diabetes

Reduce your risk by using the Air Quality Index (AQI) to plan outdoor activities - www.airnow.gov

<table>
<thead>
<tr>
<th>AQI Levels of Health Concern</th>
<th>AQI Values</th>
<th>What Actions Should People Take?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>0-50</td>
<td>Suggested Activities</td>
</tr>
<tr>
<td>Moderate</td>
<td>51-100</td>
<td>People usually sensitive to air pollution; Exercise moderate intensity if air quality is better</td>
</tr>
<tr>
<td>Unhealthy for Sensitive Groups</td>
<td>101-150</td>
<td>Sensitive groups: cut back on strenuous exercise; perform moderate intensity exercise if air quality is better</td>
</tr>
<tr>
<td>Unhealthy</td>
<td>151-200</td>
<td>Everyone: cut back on strenuous exercise; perform moderate intensity exercise if air quality is better</td>
</tr>
<tr>
<td>Very Unhealthy</td>
<td>201-300</td>
<td>Everyone: avoid all outside physical activities</td>
</tr>
</tbody>
</table>

• Revised by EPA/CDC and NIOSH/USFS/California Agencies
• Updated air quality and health information
• Exposure reduction measures incorporate stronger evidence base
• Entirely new section on communicating air quality
  – Uses “Current PM” levels from AirNow
  – Uses satellite information on Fires: Current Conditions page
  – Visual range information updated
• New fact sheets about children’s health

https://www3.epa.gov/airnow/wildfire_may2016-revised.pdf
Coming Soon - Wildfire Guide Fact Sheets

• Prepare for Fire Season
• Reduce Your Smoke Exposure
• Children’s Health and Wildfires
• Indoor Air Filtration
• Protect Yourself from Ash
• Respiratory Protection from Wildfire Smoke and Ash
Wildfire Guide – Next Revision

- Updated look
- Health effects section
  - Addition of ozone
  - Multi-day exposure
  - Heat and smoke
  - Smoke vs urban particles
- Add sections
  - PM web course for health professionals
  - Sensor use
  - Ash clean-up
- Additional fact sheets
  - Older Adults
  - Pets
  - Livestock
  - After the Fire
Coming soon
Thank you!

Susan Lyon Stone  
Office of Air Quality Planning and Standards  
Office of Air and Radiation  
U.S. Environmental Protection Agency  
Email: stone.susan@epa.gov
Air Pollution and Cardiovascular Health
The Role of Million Hearts 2022

National Environmental Health Association
February 28, 2018

Janet Wright MD, FACC
Executive Director, Million Hearts
Million Hearts® 2022

• **Aim:** Prevent 1 million—or more—heart attacks and strokes in the next 5 years

• National initiative co-led by
  • Centers for Disease Control and Prevention (CDC)
  • Centers for Medicare & Medicaid Services (CMS)

• Partners across federal and state agencies and private organizations and individuals
### Opportunities in U.S. Adults to Prevent Cardiovascular Disease

<table>
<thead>
<tr>
<th>Health Factor</th>
<th>Unhealthy Measurement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Pressure</td>
<td>34 M</td>
<td>Uncontrolled</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>35M/42M</td>
<td>Unmanaged</td>
</tr>
<tr>
<td>Sodium</td>
<td>215M</td>
<td>Overconsume</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>124 M</td>
<td>Underexert</td>
</tr>
<tr>
<td>Tobacco Use</td>
<td>36.5 M</td>
<td>Smoke</td>
</tr>
</tbody>
</table>

We Know What Works
Million Hearts® 2022

Aim: Prevent 1 Million Heart Attacks and Strokes in 5 Years

Keeping People Healthy

Optimizing Care

Priority Populations
**Million Hearts® 2022**  
*Priorities and Objectives*

### Keeping People Healthy
- Reduce Sodium Intake
- Decrease Tobacco Use
- Increase Physical Activity

### Optimizing Care
- Improve ABCS*
- Increase Use of Cardiac Rehab
- Engage Patients in Heart-healthy Behaviors

### Improving Outcomes for Priority Populations
- Blacks/African Americans
- 35- to 64-year-olds
- People who have had a heart attack or stroke
- People with mental illness or substance use disorders

*Aspirin use when appropriate, Blood pressure control, Cholesterol management, Smoking cessation*
# Keeping People Healthy

<table>
<thead>
<tr>
<th>Goals</th>
<th>Effective Public Health Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reduce Sodium Intake</strong></td>
<td>• Enhance consumers’ options for lower sodium foods</td>
</tr>
<tr>
<td>Target: 20%</td>
<td>• Institute healthy food procurement and nutrition policies</td>
</tr>
<tr>
<td><strong>Decrease Tobacco Use</strong></td>
<td>• Enact smoke-free space policies that include e-cigarettes</td>
</tr>
<tr>
<td>Target: 20%</td>
<td>• Use pricing approaches</td>
</tr>
<tr>
<td></td>
<td>• Conduct mass media campaigns</td>
</tr>
<tr>
<td><strong>Increase Physical Activity</strong></td>
<td>• Create or enhance access to places for physical activity</td>
</tr>
<tr>
<td>Target: 20%</td>
<td>• Design communities and streets that support physical activity</td>
</tr>
<tr>
<td>(Reduction of inactivity)</td>
<td>• Develop and promote peer support programs</td>
</tr>
</tbody>
</table>
# Optimizing Care

<table>
<thead>
<tr>
<th>Goals</th>
<th>Effective Health Care Strategies</th>
</tr>
</thead>
</table>
| Improve ABCS*  
Targets: 80% | *High Performers Excel in the Use of…*  
- Teams—including pharmacists, nurses, community health workers, and **cardiac rehab professionals**  
- Technology—decision support, patient portals, e- and default referrals, registries, and algorithms to find gaps in care  
- Processes—treatment protocols; daily huddles; ABCS scorecards; proactive outreach; **finding those with** undiagnosed high BP or cholesterol, tobacco use, **particulate matter exposure**  
- Patient and Family Supports—training in home blood pressure monitoring; problem-solving in medication adherence; counseling on nutrition, **physical activity**, tobacco use, **risks of particulate matter**; referral to community-based **physical activity programs and cardiac rehab** |
| Increase Use of Cardiac Rehab  
Target: 70% |  |
| Engage Patients in Heart-healthy Behaviors  
Targets: TBD |  |

*Aspirin use when appropriate, BP control, Cholesterol management, Smoking cessation
<table>
<thead>
<tr>
<th>Priority Population</th>
<th>Objectives</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacks/African Americans</td>
<td>• Improving hypertension control</td>
<td>• Implement tailored protocols</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Problem-solve in med adherence</td>
</tr>
<tr>
<td>35-64 year olds</td>
<td>• Improving HTN control and statin use</td>
<td>• Implement tailored protocols</td>
</tr>
<tr>
<td></td>
<td>• Increasing physical activity</td>
<td>• Increase access to and participation in community-based activity programs</td>
</tr>
<tr>
<td>People who have had a heart attack or stroke</td>
<td>• Increasing cardiac rehab referral and participation</td>
<td>• Use opt-out referral and CR liaison visits at discharge; ensure timely enrollment post-discharge</td>
</tr>
<tr>
<td></td>
<td>• Avoiding exposure to particulate matter</td>
<td>• Increase use of Air Quality Index</td>
</tr>
<tr>
<td>People with mental illness or substance</td>
<td>• Reducing tobacco use</td>
<td>• Integrate tobacco cessation into behavioral health treatment</td>
</tr>
<tr>
<td>abuse disorders</td>
<td></td>
<td>• Institute tobacco-free policy at mental health and substance use treatment facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tailored quitline protocols</td>
</tr>
</tbody>
</table>
Air Quality Awareness

- Among people with known heart disease:
  - Are they aware of air quality alerts?
  - Have they discussed with a health professional strategies to reduce air pollution exposure?
  - Do they avoid busy roads to reduce air pollution exposure?

- ConsumerStyles survey, 2014-16

Particle Pollution

- $\text{PM}_{2.5}$ refers to particulate matter of 2.5 micrometers or less in diameter.
- Exposure is linked to an increase in risk of heart attacks, strokes, and rhythm disorders.

Image source: EPA, Office of Research and Development
# Air Quality Index (AQI)

<table>
<thead>
<tr>
<th>AQI Values</th>
<th>Levels of Health Concern</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-50</td>
<td>Good</td>
<td>Air quality is considered satisfactory, and air pollution poses little or no risk.</td>
</tr>
<tr>
<td>51-100</td>
<td>Moderate</td>
<td>Air quality is acceptable; may be a moderate health concern for people who are unusually sensitive to air pollution.</td>
</tr>
<tr>
<td>101-150</td>
<td>Unhealthy for sensitive groups</td>
<td>Members of sensitive groups may experience health effects. The general public is not likely to be affected.</td>
</tr>
<tr>
<td>151-200</td>
<td>Unhealthy</td>
<td>Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.</td>
</tr>
<tr>
<td>201-300</td>
<td>Very unhealthy</td>
<td>Health alert: everyone may experience more serious health effects.</td>
</tr>
<tr>
<td>301-500</td>
<td>Hazardous</td>
<td>Health warnings of emergency conditions. The entire population is more likely to be affected.</td>
</tr>
</tbody>
</table>

The AQI can be found:
- On the web: www.airnow.gov
- On Facebook and Twitter
- Through EnviroFlash email alerts
- With the free AirNow App for iPhones and Android
Key Actions to Protect Your Health From Air Pollution

- Know when and where particle pollution levels may be unhealthy
  - Busy roads
  - Rush hour traffic
  - Smoke from fires

- Plan activities when and where pollution levels are lower
  - Delay activity until air is cleaner or move activity indoors

- Check the Air Quality Index, which provides forecasts of daily air quality

- Change your activity level
  - Reduce activity (ex: walk instead of jog)

- Reduce overall risk of heart disease or stroke

- Know the warning signs of heart attack or stroke
Million Hearts Family
Priority Actions

• Raise awareness among those at-risk, their families, and the clinicians who care for them

• Encourage health professionals to take EPA’s web-based course: Particle Pollution and Your Patients' Health

• Educate at-risk patients about mitigation behaviors

• Incorporate messages about air quality into cardiac rehab program curriculum

• Encourage adoption of EPA’s Air Quality Flag Program among hospitals, employers, health systems, others

• Disseminate PM$_{2.5}$ content via Million Hearts channels
Thank you

- Reach me at [janet.wright@cms.hhs.gov](mailto:janet.wright@cms.hhs.gov)