Preventing Chronic Disease: Eliminating the Leading Preventable Causes of Premature Death and Disability in the United States

A Presentation and Learning Unit Prepared by the National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention
Overview

Purpose
The CDC National Center for Chronic Disease Prevention and Health Promotion has developed this unit as a presentation and learning resource for public health practitioners, students, and others.
Target Audiences

This unit is for delivery to or use by

- Front-line practitioners in federal, state, tribal, and local public health agencies.
- Students in schools of public health, policy, and medicine.
- Policy makers, health professionals, health educators, program managers, and others with interests in and responsibilities for public health.
Topics Covered in This Unit

1. Scope of chronic disease globally.
2. Chronic disease burden in the United States.
3. Reducing the preventable burden of chronic disease: the CDC framework.
4. Summary points and future directions.
The Scope of Chronic Disease Globally
Noncommunicable conditions (e.g., cardiovascular diseases, diabetes, cancers, and chronic respiratory diseases) account for nearly two-thirds of deaths globally.

Global Burden Summary

- Risk factors responsible for global trends:
  - High blood pressure.
  - Tobacco smoking and secondhand smoke exposure.
  - High body mass index.
  - Physical inactivity.
  - Alcohol use.
  - Diets low in fruits and vegetables and high in sodium and saturated fats (including artificial trans fats).
Figure 1. Total deaths by broad cause group, by WHO Region, World Bank income group and by sex, 2008

Figure 2. Proportion of global NCD deaths under the age of 70, by cause of death, 2008

WHO “Best Buys” in Population Interventions

- Protecting people from tobacco smoke and banning smoking in public places.
- Warning about the dangers of tobacco use.
- Enforcing bans on tobacco advertising, promotion and sponsorship.
- Raising taxes on tobacco.
- Restricting access to retailed alcohol.
- Enforcing bans on alcohol advertising.
- Raising taxes on alcohol.
- Reduce salt intake and salt content of food.
- Replacing trans-fat in food with polyunsaturated fat.
- Promoting public awareness about diet and physical activity, including through mass media.

Chronic Disease Burden in the United States
United States Versus “Peer” Countries

When compared with 16 other high-income “peer” countries, the United States is less healthy in key areas, including obesity, diabetes, heart disease, chronic lung disease, and disability.
Chronic diseases

- Are principal causes of suffering, disability, and death.
- Account for most health care expenditures.
Chronic diseases are the leading causes of death and disability.

As of 2012:

- About half of all adults—117 million people—have one or more chronic health conditions.
- One of four adults has two or more chronic health conditions.
Chronic diseases are the leading causes of death and disability.

- In 2010:
  - Seven of the top 10 causes of death were chronic diseases.
  - Two of these—heart disease and cancer—together accounted for nearly 48% of all deaths.
Chronic diseases are the leading causes of death and disability.

- Diabetes is the leading cause of
  - Kidney failure.
  - Lower-limb amputations other than those caused by injury.
  - New cases of blindness among adults.
Chronic diseases are the leading causes of death and disability.

- Obesity is a serious health concern:
  - During 2009 through 2010, more than one-third of adults, or about 78 million people, were obese (defined as body mass index [BMI] ≥30 kg/m$^2$).
  - Nearly one of five youth aged 2 to 19 years was obese (BMI ≥95th percentile).
Chronic diseases are the leading causes of death and disability.

- Arthritis is the most common cause of disability.
- Of the 53 million adults with a doctor’s diagnosis of arthritis, more than 22 million say arthritis causes them to have trouble with their usual activities.
Health risk behaviors cause most chronic diseases.

- Health risk behaviors are unhealthy behaviors that can be changed. Four of these behaviors cause much of the illness, suffering, and early death related to chronic diseases and conditions:
  - Lack of exercise or physical activity.
  - Poor nutrition.
  - Tobacco use.
  - Drinking too much alcohol.
- About half of adults (47%) have at least one of the following major risk factors for heart disease or stroke: uncontrolled high blood pressure, uncontrolled high LDL cholesterol, or are current smokers.
In 2011:

- More than half (52%) of adults aged 18 years or older did not meet recommendations for aerobic exercise or physical activity.
- 76% did not meet recommendations for muscle-strengthening physical activity.
Health risk behaviors: poor nutrition

- Ninety percent of Americans consume too much sodium, increasing their risk of high blood pressure.
- In 2011:
  - More than one-third (36%) of adolescents said they ate fruit less than once a day, and 38% said they ate vegetables less than once a day.
  - 38% of adults said they ate fruit less than once a day, and 23% said they ate vegetables less than once a day.
Health risk behaviors: tobacco use

- Cigarette smoking accounts for more than 480,000 deaths each year.
- In 2012, more than 42 million adults—close to 1 of every 5—said they currently smoked cigarettes.
- Each day:
  - More than 3,200 youth younger than 18 years smoke their first cigarette.
  - Another 2,100 youth and young adults who smoke every now and then become daily smokers.
Health risk behaviors: drinking too much alcohol

- Drinking too much alcohol is responsible for 88,000 deaths each year, more than half of which are due to binge drinking.
- About 38 million adults report binge drinking an average of 4 times a month, and have an average of 8 drinks per binge, yet most binge drinkers are not alcohol dependent.
Chronic diseases are costly.

- In 2010, total spending for the Medicare population (largely aged ≥65 years) was more than $300 billion.

- 93% of Medicare spending was for people with ≥2 chronic conditions.
In 2006: 84% of all health care spending in 2006 was for the 50% of the population who have one or more chronic medical conditions.

In 2010: Total costs of heart disease and stroke were estimated to be $315.4 billion.
- Of this amount, $193.4 billion was for direct medical costs, not including costs of nursing home care.

Cancer care costs $157 billion in 2010 dollars.

In 2012, the total estimated cost of diagnosed diabetes was $245 billion, including $176 billion in direct medical costs and $69 billion in decreased productivity (costs associated with absenteeism, being less productive while at work, or not being able to work at all because of diabetes).
Chronic diseases are costly.

- In 2003, the total cost of arthritis and related conditions was about $128 billion.
  - Of this amount, nearly $81 billion was for direct medical costs, and $47 billion was for indirect costs associated with lost earnings.
- In 2008, medical costs linked to obesity were estimated to be $147 billion.
  - Annual medical costs for people who are obese were $1,429 higher than those for people of normal weight in 2006.
For 2009–2012, economic costs due to smoking were estimated to be more than $289 billion a year.

- This cost includes at least $133 billion in direct medical care for adults and more than $156 billion for lost productivity from premature death estimated from 2005 through 2009.

In 2006, economic costs of drinking too much alcohol were estimated to be $223.5 billion, or $1.90 a drink.

- Most of these costs were due to binge drinking and resulted from losses in workplace productivity, health care expenses, and crimes related to excessive drinking.
Chronic diseases are a major cause of disability and lost productivity.

- 12.6% of the population have a disability, including 43.8% of those aged 75 or older.
- Lost productivity resulting from chronic conditions and risk factors is associated with enormous costs for those remaining in the workforce and for those who leave the workforce prematurely because of disability.
Chronic diseases are unequally distributed.

- Burden is associated with
  - Education/income.
  - Race/ethnicity.
  - Geography.

- Examples:
  - Stroke death rates highest in Southeast.
  - Smoking prevalence highest among some American Indian tribes.
  - Cardiovascular disease death rates highest among African Americans.
  - Obesity rates highest among those with low education or low income

Relevant citations:
Chronic disease indicators
## Top 10 Causes of Death, United States, 2011

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause of Death</th>
<th>ICD-9 Code</th>
<th>Number</th>
<th>Death Rate</th>
<th>Age-Adjusted Death Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diseases of the heart</td>
<td>I00-I09, I11, I13, I20-I51</td>
<td>596,339</td>
<td>191.4</td>
<td>173.7</td>
</tr>
<tr>
<td>2</td>
<td>Malignant neoplasms</td>
<td>C00-C97</td>
<td>575,313</td>
<td>184.6</td>
<td>166.6</td>
</tr>
<tr>
<td>3</td>
<td>Chronic lower respiratory diseases</td>
<td>J40-J47</td>
<td>143,382</td>
<td>46.0</td>
<td>42.7</td>
</tr>
<tr>
<td>4</td>
<td>Cerebrovascular diseases</td>
<td>I60-I69</td>
<td>128,931</td>
<td>41.4</td>
<td>37.9</td>
</tr>
<tr>
<td>5</td>
<td>Accidents (unintentional injuries)</td>
<td>V01-X59, Y85-Y86</td>
<td>122,777</td>
<td>39.4</td>
<td>38.0</td>
</tr>
<tr>
<td>6</td>
<td>Alzheimer’s disease</td>
<td>G30</td>
<td>84,691</td>
<td>27.2</td>
<td>24.6</td>
</tr>
<tr>
<td>7</td>
<td>Diabetes mellitus</td>
<td>E10-E14</td>
<td>73,282</td>
<td>23.5</td>
<td>21.5</td>
</tr>
<tr>
<td>8</td>
<td>Influenza and pneumonia</td>
<td>J09-J18</td>
<td>53,667</td>
<td>17.2</td>
<td>15.7</td>
</tr>
<tr>
<td>9</td>
<td>Nephritis, nephrotic syndrome, and nephrosis</td>
<td>N00-N07, N17-N19, N25-N27</td>
<td>45,731</td>
<td>14.7</td>
<td>13.4</td>
</tr>
<tr>
<td>10</td>
<td>Intentional self-harm (suicide)</td>
<td>U03, X50-X84, Y87.0</td>
<td>38,285</td>
<td>12.3</td>
<td>12.0</td>
</tr>
</tbody>
</table>


- Based on number of deaths
- New subcategories replaced previous ones for N18 (Chronic kidney disease) in 2011. Changes affect comparability with previous year’s data.
### Age-adjusted Percentage of Adult Population With Selected Chronic Disease Risk Factors and Conditions, by Year, United States, 1999–2012†

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Diabetes&lt;sup&gt;b&lt;/sup&gt;</td>
<td>9.0</td>
<td>10.4</td>
<td>11.5</td>
</tr>
<tr>
<td>High cholesterol&lt;sup&gt;b&lt;/sup&gt;</td>
<td>25.0</td>
<td>27.0</td>
<td>26.7</td>
</tr>
<tr>
<td>Hypertension&lt;sup&gt;b&lt;/sup&gt;</td>
<td>30.0</td>
<td>30.5</td>
<td>30.0</td>
</tr>
<tr>
<td>Obesity&lt;sup&gt;b&lt;/sup&gt;</td>
<td>30.5</td>
<td>34.4</td>
<td>35.7</td>
</tr>
<tr>
<td>Current cigarette smoking&lt;sup&gt;c&lt;/sup&gt;</td>
<td>23.1</td>
<td>20.8</td>
<td>19.3</td>
</tr>
<tr>
<td>Did not meet physical activity guidelines&lt;sup&gt;d&lt;/sup&gt;</td>
<td>54.7</td>
<td>N/A</td>
<td>49.1</td>
</tr>
<tr>
<td>Binge drinking&lt;sup&gt;e&lt;/sup&gt;</td>
<td>14.9&lt;sup&gt;f&lt;/sup&gt;</td>
<td>15.4&lt;sup&gt;g&lt;/sup&gt;</td>
<td>15.8&lt;sup&gt;h&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>†</sup> Source: Health, United States, 2012 ([http://www.cdc.gov/nchs/data/hus/hus12.pdf](http://www.cdc.gov/nchs/data/hus/hus12.pdf)) unless otherwise indicated; data include estimates of meeting physical activity guidelines for 2011 and current cigarette smokers for 2012. <sup>a</sup> For prevalence of “current cigarette smokers”, estimate for 2012 is as indicated in footnote “c” below; for prevalence of “did not meet physical activity guidelines”, estimate for 2011 is as indicated in footnote d below. <sup>b</sup> Percentage of persons ≥20 y (source: NHANES). <sup>c</sup> Percentage of persons ≥18 y who were current cigarette smokers (years: 2000, 2005, 2010); for 2012, the prevalence was 18.0% (source: National Health Interview Survey). <sup>d</sup> Percentage of persons ≥18 y who met neither aerobic activity or nor muscle-strengthening 2008 federal physical activity guidelines (years 2000 and 2010); for 2011, the prevalence was 47.6% (source: National Health Interview Survey). <sup>e</sup> Source: BRFSS. Estimates are not age-adjusted. <sup>f</sup> Percentage of persons 18 y and over who consumed ≥5 drinks on ≥1 occasion(s) during the past month (1999 only). <sup>g</sup> Percentage of males ≥18 y who consumed ≥5 drinks and females ≥18 y who consumed ≥4 drinks on ≥1 occasion(s) during the past 30 days (2006 only). <sup>h</sup> Percentage of males ≥18 y who consumed ≥5 drinks and females ≥18 y who consumed ≥4 drinks on ≥1 occasion(s) during the past 30 days (2009 only).
Percentage of Medicare FFS Beneficiaries by Number of Chronic Conditions: 2010

Public health and health care efforts have made a difference.

- Self-reported cigarette smoking among adults declined from 42% (1965) to 18% (2011).
- Coronary heart disease death rates declined from 482.6 deaths per 100,000 population (1968) to 109.0 (2011).
Challenges remain.

- Cardiovascular disease continues to be the leading cause of death.
- Tobacco use remains among the leading preventable causes of death, accounting for 480,000 deaths annually (about 1 in every 5).
- Effective clinical and community interventions exist but are underutilized for leading risk factors including tobacco smoking, secondhand smoke exposure, high body mass index, alcohol overuse, high blood pressure, high fasting plasma glucose.
Challenges remain.

- Some risk factors—chiefly obesity and some of its downstream consequences—have moved in the wrong direction:
  - In 1985, no state had an obesity prevalence greater than 14%, but by 2010, every state had a prevalence of 20% or higher,
  - Between 1988–1994 and 2007–2010, the proportion of adults aged ≥20 years with diabetes increased from 9.1% to 11.4%.
Gaps in Policies and Environments to Support Healthy Lifestyles

- Less than half (48.9%) the total US population is protected from secondhand tobacco smoke by comprehensive smoke-free air laws that cover all workplaces, restaurants, and bars.
- Access to nutritious foods (e.g., through full-service groceries and farmers markets) and to safe places for physical activity (e.g., playgrounds, hiking trails, and bike paths) are suboptimal in many areas.
- Pricing of tobacco products, alcohol, and high-calorie, low-nutrition foods and beverages is not commensurate with the costs of the health consequences associated with their use.
For the list of municipalities and counties with smoke-free laws depicted on this map, see http://www.no-smoke.org/pdf/WRBLawsMap.pdf.
Reducing the Preventable Burden of Chronic Disease: The CDC Framework
Factors Contributing to the Burden of Chronic Disease

- Chronic disease burden reflects key factors:
  - Persistent high prevalence of risk factors, including lifestyle and other behaviors.
  - Social and environmental factors that adversely affect health.
  - Increasing life expectancy leading to greater numbers of older people with chronic conditions and associated disabilities.
- Progress will require working across silos and sectors.
Large numbers and high rates of chronic disease create substantial challenges for the public health and health care systems:

- Public health often focuses on acute problems (e.g., controlling infectious disease outbreaks), while health care providers focus on care delivery.
- Neither system prioritizes sustained, long-term investments in health promotion and disease prevention.
Priorities for Chronic Disease

- **Preventing** the development of chronic diseases.
- **Detecting** chronic diseases early and slowing their progression.
- **Mitigating** complications of chronic disease to optimize quality of life and to reduce demand on the health care system.
Despite recent investments in community health, in 2010 public health spending by governments at all levels constituted only about 3% of total health spending.
The chronic disease challenge requires sustained policy and program focus on high-value prevention targets including strengthened links between public health and clinical health care:

- Bundle strategies and interventions.
- Address combinations of risk factors and conditions.
- Create population-wide change.
- Reach population subgroups most affected.
- Ensure implementation by multiple sectors, including public-private partnerships with involvement from all stakeholders.
Multicomponent Population Health Strategies for Addressing Multiple Risks And Conditions

- Changing norms in tobacco use through
  - Policy interventions in health care, taxation and finance, indoor and outdoor public places.
  - Businesses and employers.
  - Media.

- Reducing obesity and improving multiple health outcomes through
  - Menu labeling laws, pricing strategies, and voluntary changes in portion size.
  - Increased availability of affordable healthy foods and beverages.
  - Accessible safe places for regular physical activity.
Multicomponent Population Health Strategies for Addressing Multiple Risks And Conditions

- Health system interventions:
  - Widespread implementation of health information technologies.
  - Team-based care.
## CDC Chronic Disease Intervention Domains

<table>
<thead>
<tr>
<th>Domain</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Epidemiology and surveillance</td>
<td>Monitor trends and track progress</td>
</tr>
<tr>
<td>2. Policy and environmental approaches</td>
<td>Promote health and support and reinforce healthful behaviors</td>
</tr>
<tr>
<td>3. Health systems interventions</td>
<td>Improve the effective delivery and use of clinical and other high-value preventive services</td>
</tr>
<tr>
<td>4. Community programs linked to clinical services</td>
<td>Improve and sustain management of chronic conditions</td>
</tr>
</tbody>
</table>
Domain 1: Epidemiology and Surveillance

- Public health epidemiology and surveillance:
  - Provide essential data and information to define and prioritize problems and advance policies.
  - Identify populations most affected, gaps, and disparities.
  - Inform prevention and control efforts.
  - Monitor progress and document successes.

- Domain 1 involves gathering, analyzing, and disseminating data and conducting evaluation to inform, prioritize, deliver, and monitor programs and population health.
Monitoring the Burden of Chronic Disease: Public Health Surveillance Data

Surveillance data provide essential information to guide intervention strategies by:

- Defining the burden of chronic disease (i.e., the “downstream” indicators).
- Guiding priorities for interventions.
- Monitoring progress for the whole population and across population subgroups.
Monitoring the Burden of Chronic Disease: Public Health Surveillance Data

Key risk factors for and indicators of chronic disease burden are monitored in surveillance and data systems maintained at state and national levels:

- Behavioral Risk Factor Surveillance System (BRFSS).
- National Health and Nutrition Examination Survey (NHANES).
- National Health Interview Survey (NHIS).
- Other national survey data.
- Medicare fee-for-service claims data.
State and national systems allow monitoring of conditions and risk behaviors by education, income, race/ethnicity, and other variables in order to monitor disparities in health status:

- BRFSS: prevalence of lifestyle risk factors at state level.
- NHANES and NHIS: national prevalence of selected chronic conditions and other health indicators.
- NVSS: cause-specific death rates at national level based on deaths registered by state vital records offices and processed at the national level.

Other national-level data:
- Medical Expenditure Panel Survey.
- National Inpatient Sample.
- National Ambulatory Medical Care Survey.
- Medicare fee-for-service claims data.
Data Compilations on Chronic Disease in the United States

- CDC regularly reports data on prevalence and patterns of selected chronic conditions and on risk factors in “Health, United States” (includes data drawn from NHIS, NHANES, and other sources).

- These data document the high prevalence of chronic conditions and risk factors and key health disparities in the United States.

- The predominant effect of chronic diseases on US mortality patterns is documented in CDC’s annual reports on US death rates, leading causes of death, and other mortality data.
Other Key Data Compilations on Chronic Disease in the United States
Epidemiology and Surveillance Opportunities and Needs

- Public health surveillance data can be augmented by creative use of data from health care and other systems, and by novel uses of new tools.
- Health information technology may enable increased efficiency and timeliness of public health surveillance.
  - Meaningful-use standards should accelerate reporting to state cancer registries, resulting in expanded understanding of timeliness of care, effective treatments, and disparities in cancer outcomes.
  - Use of health system and other data to conduct surveillance of BMI should improve obesity surveillance by increasing timeliness and availability of locally relevant information on obesity in children and adults and across population subgroups.
• But: some key risk behaviors (e.g., diet, sodium intake, physical activity, alcohol use) are poorly captured in public health and health care systems.
• Need → strengthened behavioral surveillance data.
Domain 2 involves improvement to population health through community strategies that promote healthy behaviors:

- Policies that change context.
- Environmental approaches that make healthy choices easier.
Health promotion approaches that incorporate policy and environmental improvements:

- **Generally are more effective than other approaches to promote healthy behaviors.**
- Over time may save more lives at lower cost than alternative interventions.
- Are often implemented by non-health sectors (e.g., businesses and employers, transportation, parks and recreation departments, and planning and economic development agencies).
- Generally have broad reach and sustained impact because of jurisdiction-wide application at national, state or local levels.
Prevention Strategies

- **Policies** that change context:
  - Smoke-free air laws that protect nonsmokers from secondhand tobacco smoke.
  - Bans on artificial trans fats that eliminate a cardiotoxin from the food supply.

- **Environmental approaches** that make healthy choices easier and more convenient, affordable and safe:
  - Community design and zoning standards that improve street connectivity and transportation alternatives to encourage walking and biking.
  - Bans on flavored cigarettes to help combat youth smoking.
Although health care interventions typically have less overall population impact than community interventions that involve policy and environmental change, elements of the health care system can be powerful drivers of population health improvement.

- Example: Improved health care has contributed substantially to declines in cardiovascular disease.

Through a population health perspective, public health identifies key targets for the health care system to increase demand for preventive services, expand the population served, and reach underserved populations.
Domain 3: Health System Interventions

- System enhancements to achieve a goal affect all elements of an organization.
- Domain 3 involves optimizing health care systems to more effectively deliver clinical and other preventive services to prevent, detect early, and mitigate chronic diseases.
Public health and health care systems do not directly address many determinants of health (e.g., poverty or education)—but both systems can
• Mitigate adverse health consequences of social and economic structures.
• Change the context within which they occur.
• Target interventions to reach those experiencing the greatest burden of disease.
Health System Opportunities

Health care reform developments (e.g., the Affordable Care Act and meaningful-use regulations) provide opportunities to drive additional population health improvement:

- Expanded population coverage.
- Requirements for coverage of effective clinical preventive services.
- Changes in the organization of and payment for care.
- Enhanced involvement of a broad range of health professionals in delivering care.
- Increased deployment and use of health information technology and associated tools (e.g., reminders and clinical decision support).
- Increased measurement and reporting of successes and shortfalls.
Roles for Public and Community Health Organizations

Governmental public health and community health organizations can foster better health care system utilization by

- Defining high-impact services and priorities.
- Conducting surveillance of high-priority health outcomes.
- Assuring that the hardest-to-reach populations receive the clinical care they need by addressing access barriers.
- Using education and other efforts to more fully engage the public in its own health care.
Domain 4: Community Programs Linked to Clinical Services

- Approaches that help **people with or at high risk for chronic diseases to better manage their conditions** result in better quality of life and reduced need for care.

- Improved links between clinical and community settings enable **community delivery of proven programs**, which clinicians may refer patients to, with third-party payments to community organizations and lay providers.

- **Effective patient self-management** improves quality of life, averts disease progression and complications, and reduces the number of emergency department visits.
Domain 4: Community Programs Linked to Clinical Services

- Cost-effective programs—such as the Chronic Disease Self-Management Program and the National Diabetes Prevention Program—offer considerable savings over clinician-delivered models.

- Such programs address key problems (cardiovascular disease, diabetes, arthritis, falls in the elderly, and other risks and conditions) by giving people with chronic disease the tools and skills to manage their condition through
  - Delivery of structured lifestyle interventions over periods ranging from weeks to months
  - Standard protocols that are customized to the particular community
The mutually reinforcing effect of the four domains is illustrated by the Million Hearts initiative:

• Million Hearts seeks to prevent 1 million heart attacks and strokes from 2012 to 2017 by empowering Americans to make heart-healthy lifestyle choices and by improving care for those needing treatment.

• Million Hearts deploys all four domains to address and improve heart health at multiple levels, in multiple settings, and in collaboration with multiple sectors.
## The Million Hearts Initiative

<table>
<thead>
<tr>
<th>Domain</th>
<th>Strategies and interventions to prevent heart attacks and strokes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced surveillance</td>
<td>Monitor:</td>
</tr>
<tr>
<td></td>
<td>• Behaviors and environments such as sodium consumption and sodium in the food supply, smoking prevalence, and the proportion of the population protected from secondhand smoke exposure.</td>
</tr>
<tr>
<td></td>
<td>• Use of blood pressure control medications and the proportion of those with hypertension who have their blood pressure under control.</td>
</tr>
<tr>
<td>Environmental approaches</td>
<td>Support for communities to:</td>
</tr>
<tr>
<td></td>
<td>• Reduce the amount of sodium in the food supply, including in prepared foods served in schools, work sites, health care settings and institutions.</td>
</tr>
<tr>
<td></td>
<td>• Increase access to affordable fruits and vegetables and opportunities for safe physical activity.</td>
</tr>
<tr>
<td></td>
<td>• Decrease opportunities for exposure to secondhand smoke in public and work places and multiunit housing and promote cessation from tobacco use.</td>
</tr>
</tbody>
</table>
## The Million Hearts Initiative

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<tr>
<th>Domain</th>
<th>Strategies and interventions to prevent heart attacks and strokes</th>
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</thead>
<tbody>
<tr>
<td>Health systems interventions</td>
<td>Increase blood pressure control, appropriate aspirin use, and cholesterol management by</td>
</tr>
<tr>
<td></td>
<td>• Strengthening reporting of outcomes, providing feedback and tools to physicians on performance.</td>
</tr>
<tr>
<td></td>
<td>• Implementing team-based approaches to manage high blood pressure, including physicians, pharmacists, nurses and allied health professionals.</td>
</tr>
<tr>
<td>Community programs linked to clinical services</td>
<td>Support patient efforts to manage their conditions by providing self-management education and tools in structured lifestyle programs, such as the National Diabetes Prevention Program, linked to supportive community environments.</td>
</tr>
</tbody>
</table>
CDC’s Chronic Disease Prevention System

WHAT WE DO
- Provide leadership and technical assistance
- Monitor chronic diseases, conditions, and risk factors
- Conduct and translate research and evaluation to enhance prevention
- Engage in health communication
- Develop sound public health policies
- Implement prevention strategies

WHO WE WORK WITH
- State, tribal, territorial, and local governments
- National, state, and local nongovernmental organizations

WHERE WE DO IT
- Communities
- Workplaces
- Schools and academic institutions
- Health care settings
- Child care settings
- Faith organizations
- Homes

HOW WE DO IT ➞ THE FOUR DOMAINS

EPIDEMIOLOGY AND SURVEILLANCE
Provide data and conduct research to guide, prioritize, deliver, and monitor programs and population health

ENVIRONMENTAL APPROACHES
Make healthy behaviors easier and more convenient for more people

HEALTH SYSTEM INTERVENTIONS
Improve delivery and use of quality clinical services to prevent disease, detect diseases early, and manage risk factors

COMMUNITY-CLINICAL LINKS
Ensure that people with or at high risk of chronic diseases have access to quality community resources to best manage their conditions

WHY WE DO IT
- Healthier environments
- Healthier behaviors
- Greater health equity
- Increased productivity
- Lower health care costs
- Increased life expectancy
- Improved quality of life

WHAT WE ACHIEVE
- Less tobacco use
- Less obesity
- Less heart disease and stroke
- Less cancer
- Less diabetes
- Less arthritis
- More physical activity
- Better nutrition
- Better oral health
- Healthier mothers and babies
- Healthier kids
The four domains capture strategies that address multiple conditions and risk factors simultaneously by improving the common factors that underlie many poor health behaviors (e.g., tobacco use, poor diet, and lack of physical activity) and by strengthening opportunities and supports for engagement in healthy behaviors.
Summary and Future Directions
Summary

- Chronic diseases are the biggest challenge to global health: noncommunicable conditions account for nearly two-thirds of deaths globally.
- In the United States, chronic diseases are the principal causes of health-related suffering, disability, and death, and account for the vast majority of health care expenditures.
The US chronic disease burden largely results from key “upstream” risk factors that can be addressed at the individual and population levels through policy and environmental approaches:

- Tobacco use.
- Poor diet and physical inactivity.
- Excessive alcohol consumption.
- Uncontrolled high blood pressure.
- Hyperlipidemia.
The increasing burden of chronic disease reflects:
- Incidence and prevalence of leading chronic conditions and risk factors, which occur individually and in combination.
- Population demographics, including aging and health disparities.
Risk factors and resulting chronic diseases can be addressed at individual and population levels through:

• **Policy and environmental approaches** to change context in which health behaviors occur.

• **Early detection and better management** within the health care system to improve outcomes.

• **Community programs linked to the health care system** to slow disease progression, mitigate complications, and avert adverse outcomes.
Summary

- Effectively and equitably addressing the chronic disease burden requires public health and health care systems to
  - Deploy integrated approaches that bundle strategies and interventions.
  - Address multiple risk factors and conditions simultaneously.
  - Create population-wide change.
  - Reach population subgroups most affected.
  - Rely on implementation by multiple sectors, including public-private partnerships, and involvement from all stakeholders.
Summary

- To help address the chronic disease burden, CDC uses a framework of cross-cutting strategies consisting of four domains:
  - Epidemiology and surveillance to monitor trends and guide programs.
  - Environmental approaches to promote health and support healthy behaviors.
  - Health system interventions to improve effective use of clinical and other preventive services.
  - Community resources linked to clinical services to sustain improved management of chronic conditions.
Vision

- Establishing community conditions to support behaviors that lead to healthy life and promote effective management of chronic conditions will deliver:
  - Healthier students to schools.
  - Healthier workers to employers and businesses.
  - A healthier population to the health care system.

- Community environments that support and reinforce healthy behaviors can “off-load” substantial burden from the health care system.
Improving community conditions to support healthy behaviors and promote effective management of chronic conditions will deliver:

- Healthier students to schools
- Healthier workers to businesses and employers
- A healthier population to the health care system

Healthier People
Lower Health Care Costs
Information and Resources

- NCCDPHP Chronic Disease Overview
- NCCDPHP Chronic Disease Statistics and Tracking
- National Center for Health Statistics: Health, United States, 2013
For more information please contact Centers for Disease Control and Prevention

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.