Introduction

Nearly half of all Americans live with a chronic medical condition, and that number is expected to rise by 25 percent in the next two decades as the Baby Boomers age. The costs of chronic disease care are high for individuals and society, with three quarters of all health care spending focused on less than half the population. In California, individuals with multiple chronic conditions, 20 percent of the population, account for 60 percent of the state’s health care expenditures. For policymakers, improving the quality and efficiency of chronic care delivery and the effectiveness of prevention programs are crucial to improving the quality of life for millions of people and lowering the costs associated with chronic disease.

This visual report focuses on four common conditions that require ongoing care and can benefit from disease management: heart disease, hypertension, chronic obstructive pulmonary disease (COPD)/asthma, and diabetes. Together they account for over half of the cost of chronic disease care in California. Throughout the report, these four conditions are referred to as “target” conditions.

The report highlights the challenge for policymakers and health care providers. Notably:

• Of the 38 percent of all Californians living with one or more chronic medical conditions, nearly half have one of the four selected conditions.
• 57 percent of Californians over age 65 have been diagnosed with high blood pressure.
• 33 percent of males and 39 percent of females born in California in 2000 are expected to develop diabetes during their lifetimes.
• Average health care spending for individuals with heart disease is nearly six times the average for all individuals in California.

Except where noted, this report provides California-specific data. The prevalence figures cited are based on the California Health Interview Survey, 2003 (CHIS), while costs and information concerning multiple chronic conditions reflect a California-specific subset of the Medical Expenditure Survey, 2002 (MEPS). Please refer to the definitions and explanations page for additional information on what constitutes a chronic condition and for detailed information on data sources and methodology.
Nationwide, nearly half the population currently lives with a chronic condition. These figures are projected to rise by more than 25 percent over the next 20 years.

Nationwide, chronic conditions place a heavy burden on the health care system. In 2001, over three quarters of all health care spending was on behalf of those with chronic conditions, representing less than half the nation’s population.

*Conditions lasting a year or longer that limit a person’s function and/or require ongoing care
In California, 14 million people (38 percent) live with at least one chronic condition. More than half of this group have multiple chronic conditions, further affecting their quality of life and increasing their health care costs.

*Of the 38 percent who have at least one chronic condition, nearly 47 percent have at least one target condition. Segments exceed 100 percent due to rounding.

In 2002, almost 60 percent of California’s health care expenditures were for people with multiple chronic conditions, representing approximately 19 percent of the total population.

Health care costs are high for Californians with any of the target conditions. But the health care cost per capita for people with heart disease is by far the highest: more than five times that of the general adult population.
Health Care Spending, by Number of Target Conditions, 2002

Annual Cost per Capita

- One: $5,118
- Two: $9,805
- Three or Four: $14,501

Health care spending for individuals with multiple target conditions rises with the addition of each condition.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of Medical Expenditure Panel Survey (MEPS) data for selected chronic conditions, 2002.
In California, people with target conditions are more likely than the general population to be insured, although coverage varies by condition. For example, 60 percent of those with COPD/asthma are insured through their employers, compared to only 28 percent for those with heart disease.

*Prevalence figures for COPD/Asthma reflect the CHIS definition “ever diagnosed with asthma.”
†Includes all adults with or without chronic conditions.
Note: Medicare includes Medicare in combination with private or public coverage. Private includes employment-based and privately purchased health insurance.
Source: California Health Interview Survey (CHIS), 2003.
This map illustrates the distribution of adults with chronic conditions. The percentages of adults with chronic disease are higher in rural counties, lowest in the San Francisco Bay Area, and moderate in the Los Angeles area.

Four common chronic conditions present a significant public health challenge in California. Among all adults, hypertension is by far the most prevalent of the four. Hypertension also often leads to other chronic diseases, such as heart disease and stroke, and it is often associated with diabetes.

*Prevalence figures for COPD/Asthma reflect the CHIS definition “ever diagnosed with asthma.”
Source: California Health Interview Survey (CHIS), 2003.
Prevalence of Target Conditions, Adults, by Gender, 2003

Prevalence of the four target conditions varies little by gender.

*Prevalence figures for COPD/Asthma reflect the CHIS definition “ever diagnosed with asthma.”
Source: California Health Interview Survey (CHIS), 2003.
Prevalence* of Target Conditions, Adults, by Age Group, 2003

<table>
<thead>
<tr>
<th>Condition</th>
<th>Ages 18 to 64 (%)</th>
<th>Ages 65+ (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>18%</td>
<td>57%</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>COPD/Asthma†</td>
<td>13%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Most chronic conditions are more prevalent among the elderly in California. However, of these four, asthma is more prevalent among the working-age population.

*Prevalence calculation: % = population of ages 18 to 64 (or 65 and older) with a target condition / total population ages 18 to 64 (or 65 and older).
†Prevalence figures for COPD/Asthma reflect the CHIS definition “ever diagnosed with asthma.”

Source: California Health Interview Survey (CHIS), 2003.
Prevalence of Target Conditions, Youth, by Age Group, 2003

Among children, asthma is the most common of the target conditions examined, with nearly 1.5 million children diagnosed in California. However, the rising number of teenagers with type 2 diabetes is a serious concern. Statistically, at least one adolescent with diabetes can be found in one of every four classrooms.

*Diabetes prevalence in children under age 12 is not reported by California Health Interview Survey (CHIS) at the state level. At the national level, a 5-year study (SEARCH), funded by the Centers for Disease Control and Prevention and the National Institutes of Health, will provide more reliable estimates of diabetes in youth when completed in 2007.

Disease prevalence varies by ethnicity. In California, hypertension is by far the most common condition for the total population, although prevalence is highest for Blacks. Blacks and indigenous communities also report higher rates of COPD/asthma and diabetes.

Source: California Health Interview Survey (CHIS), 2003.
Diabetes is a serious and growing public health issue. For all individuals born in the year 2000, the lifetime risk of developing diabetes is substantial: 33 percent for males and 39 percent for females. But the risk is greatest for Hispanic males and females, 45 and 53 percent, respectively.

Prevalence of Multiple Target Conditions*, 2002

People with diabetes or heart disease as their primary diagnosis are more likely to have multiple target conditions than those whose primary diagnosis is hypertension or COPD/asthma.

*In people with any target condition.
Prevalence of Multiple Target Conditions*, Adults, by Age Group, 2002

Ages 18 to 64

- One Condition: 77%
- Two Conditions: 19%
- Three or Four Conditions: 5%

Ages 65+

- One Condition: 60%
- Two Conditions: 30%
- Three or Four Conditions: 10%

*In adults with any target condition.

Note: Percentages in the left pie chart exceed 100 percent due to rounding.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of Medical Expenditure Panel Survey (MEPS) data for selected chronic conditions, 2002.

Individuals with multiple chronic conditions require more complex and costly treatments, and are at greater risk of dying. Like all Americans, Californians with one chronic condition tend to develop multiple chronic conditions as they age.
Prevalence of Multiple Target Conditions*, by Gender, 2002

Number of Other Target Conditions

<table>
<thead>
<tr>
<th>Chronic Disease</th>
<th>Prevalence: Multiple Conditions</th>
</tr>
</thead>
</table>

*In people with any target condition.


Individuals with diabetes (especially men) or heart disease are most likely to have additional selected conditions. Those with asthma are the least likely to be diagnosed with additional selected conditions.
Prevalence of Multiple Target Conditions in People with Diabetes, by Race, 2002

Number of Other Target Conditions

<table>
<thead>
<tr>
<th>Number of Other Target Conditions</th>
<th>White</th>
<th>Black</th>
<th>Other*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>37%</td>
<td>35%</td>
<td>28%</td>
</tr>
<tr>
<td>1</td>
<td>28%</td>
<td>26%</td>
<td>34%</td>
</tr>
<tr>
<td>2 or 3</td>
<td>26%</td>
<td>27%</td>
<td>54%</td>
</tr>
<tr>
<td>4</td>
<td>12%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Medical Expenditure Panel Survey (MEPS) contains more than 20 race categories; however, sample sizes for racial groups other than White and Black (MEPS category that is solely African American) are too small to be statistically reliable.


Blacks are most likely to have diabetes as a sole target diagnosis, while those from other racial groups are most likely to suffer from one additional target condition. More than a quarter of all Blacks and Whites with diabetes suffer from three or all four target conditions.
Prevalence of Multiple Target Conditions in People with Hypertension, by Race, 2002

Blacks are more likely than all other races to have hypertension as a sole target condition.

*Medical Expenditure Panel Survey (MEPS) contains more than 20 race categories; however, sample sizes for racial groups other than White and Black (MEPS category that is solely African American) are too small to be statistically reliable.

Prevalence of Multiple Target Conditions in People with Heart Disease, by Race, 2002

Number of Other Target Conditions

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2 or 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>42%</td>
<td>15%</td>
<td>42%</td>
</tr>
<tr>
<td>Black</td>
<td>5%</td>
<td>31%</td>
<td>65%</td>
</tr>
<tr>
<td>Other*</td>
<td>38%</td>
<td>10%</td>
<td>52%</td>
</tr>
</tbody>
</table>

People with heart disease, from all races, are likely to have at least one other target condition. This is especially pronounced in Blacks, who are much more likely to be diagnosed with multiple target conditions.

*Medical Expenditure Panel Survey (MEPS) contains more than 20 race categories; however, sample sizes for racial groups other than White and Black (MEPS category that is solely African American) are too small to be statistically reliable.

Prevalence of Multiple Target Conditions in People with COPD/Asthma, by Race, 2002

For all races, especially Blacks, people with chronic obstructive pulmonary disease (COPD/asthma) are less likely to have additional target conditions.

*Medical Expenditure Panel Survey (MEPS) contains more than 20 race categories; however, sample sizes for racial groups other than White and Black (MEPS category that is solely African American) are too small to be statistically reliable.

Health Services Utilization, by Number of Target Conditions, 2002

Compared to those with only one target condition, people with multiple target conditions used substantially more services and products, especially hospital care and prescription drugs over the course of a year.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of Medical Expenditure Panel Survey (MEPS) data for selected chronic conditions, 2002.
Hospitalizations and Related Expenditures, by Number of Target Conditions, 2002

Nearly 40 percent of Californians with three or four target conditions were hospitalized in 2002, compared to only 12 percent of those with only one condition. The average annual cost for hospitalizations rises accordingly for those with multiple target conditions.

Note: Population includes only those with at least one target condition.
A substantial number of individuals with one target condition, 16 percent, are not seeing a physician regularly. Costs for physicians’ services double for individuals with two target conditions but then level off for those with three or four.

Note: Population includes only those with at least one target condition.

Prescriptions Filled and Related Expenditures, by Number of Target Conditions, 2002

Californians with three or four target conditions take many more prescription drugs than those with one or even two target conditions. Consequently, average annual prescription drug expenditures are three times higher than those for people with only one target condition.

Note: Population includes only those with at least one target condition.

Home Health Services Utilization, by Number of Target Conditions, 2002

Percent of Population

A quarter of Californians with three or all four target conditions use some type of home health services that include help with daily activities, such as eating and dressing. The need for these types of services is far less for those with only one or two of the target conditions.

Notes: Population includes only those with at least one target condition. Expenditures for home health services are too variable to be statistically reliable, and are not included in this analysis.

Prevalence of Chronic Conditions Among Medicare Beneficiaries vs. Expenses, by Number of Conditions, 2002

Similar to the general population, health care expenditures for Medicare beneficiaries with five or more chronic conditions (24 percent) make up the largest portion of Medicare’s annual outlay for California, about 70 percent of the total spent for all chronic conditions.

Notes: In California, 76 percent of Medicare beneficiaries with any chronic condition have at least one target condition.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
Medicare Expenditures, by Number of Target Conditions, 2002

Annual Expenditures per Capita

<table>
<thead>
<tr>
<th>Number of Target Conditions</th>
<th>Expenditures per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>$4,944</td>
</tr>
<tr>
<td>Two</td>
<td>$10,897</td>
</tr>
<tr>
<td>Three</td>
<td>$21,693</td>
</tr>
<tr>
<td>Four</td>
<td>$39,876</td>
</tr>
</tbody>
</table>

In California, annual Medicare expenditures per beneficiary nearly double with each additional target condition.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
Prevalence* of Multiple Target Conditions Among Medicare Beneficiaries, by Gender, 2002

Prevalence of multiple target conditions does not vary significantly by gender for Medicare beneficiaries.

*Prevalence based on total number of beneficiaries with at least one target condition.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
Prevalence* of Multiple Target Conditions Among Medicare Beneficiaries, by Race, 2002

Number of Target Conditions

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>40%</td>
<td>37%</td>
<td>19%</td>
<td>4%</td>
</tr>
<tr>
<td>Black</td>
<td>46%</td>
<td>36%</td>
<td>16%</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>40%</td>
<td>37%</td>
<td>19%</td>
<td>4%</td>
</tr>
</tbody>
</table>

*Prevalence based on total number of beneficiaries with at least one target condition.

Note: Medicare's race data is self-reported, and certain categories are outdated. The data does contain multiple categories; however, sample sizes for racial groups other than White and Black are too small to be statistically reliable.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.

Of all Medicare beneficiaries with any target condition, Blacks are slightly more likely than other racial groups to be diagnosed with only one.
Proportion of Medicare Beneficiaries and Related Expenditures, by Number of Target Conditions, 2002

Nearly 50 percent of all Medicare beneficiaries with any target condition have only one. This group accounts for only 24 percent of Medicare’s total expenditures for all target conditions. In comparison, those with three or all conditions (16 percent) account for 38 percent of expenditures.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
Medicare Beneficiaries with Target Conditions and Related Expenditures, by Number of Conditions, 2002

Proportion of...

<table>
<thead>
<tr>
<th>Chronic Disease</th>
<th>Medicare Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare beneficiaries with the largest number of conditions account for the greatest share of expenditures.</td>
<td></td>
</tr>
</tbody>
</table>

**Number of Other Target Conditions**

- 0
- 1
- 2
- 3

<table>
<thead>
<tr>
<th>Condition</th>
<th>Beneficiaries</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD/Asthma</td>
<td>18% 33% 34% 14%</td>
<td>6% 22% 44% 28%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>18% 40% 34% 8%</td>
<td>5% 21% 49% 26%</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>25% 46% 24% 4%</td>
<td>12% 40% 36% 12%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>38% 41% 18% 3%</td>
<td>14% 39% 35% 11%</td>
</tr>
</tbody>
</table>

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
Proportion of Inpatient and Physician Expenses for Medicare Beneficiaries, by Number of Target Conditions, 2002

Eighty-two percent of inpatient expenditures and 67 percent of physician expenditures for all target conditions are for those who have more than one.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
Inpatient and Physician Expenditures for Medicare Beneficiaries, by Number of Additional Conditions, 2002

Proportion of Expenditures for...

<table>
<thead>
<tr>
<th>Chronic Disease</th>
<th>Medicare Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD/Asthma</td>
<td></td>
</tr>
<tr>
<td>Inpatient</td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
</tr>
<tr>
<td>Inpatient</td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td></td>
</tr>
<tr>
<td>Heart Disease</td>
<td></td>
</tr>
<tr>
<td>Inpatient</td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
</tr>
<tr>
<td>Inpatient</td>
<td></td>
</tr>
<tr>
<td>Physician</td>
<td></td>
</tr>
</tbody>
</table>

When compared to dollars spent on physician services, inpatient spending is more highly concentrated on behalf of those with multiple conditions.

Note: Physician expenditures consist of the amount that Medicare paid physicians for services.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
Inpatient Hospital Stays and Related Expenditures for Medicare Beneficiaries, by Number of Target Conditions, 2002

Expenditures for hospitalized Medicare beneficiaries do not depend on the number of target conditions patients may have.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
About 40 percent of Medicare beneficiaries with all four target conditions were hospitalized for preventable conditions. Better coordination of outpatient care for those with multiple target conditions may improve patient outcomes, reduce the number of preventable hospitalizations, and lower overall health care spending.

*Preventable hospitalizations reflect ambulatory care sensitive conditions where the patient should not be hospitalized if appropriate outpatient care is provided.

Note: Calculation is based on all beneficiaries with at least one target condition.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
Share of Preventable* Hospitalizations for Medicare Beneficiaries, by Number of Target Conditions, 2002

*Maintainable hospitalizations reflect ambulatory care sensitive conditions where the patient should not be hospitalized if appropriate outpatient care is provided.

Note: Calculation is based on all beneficiaries with at least one target condition.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.

Medicare beneficiaries with multiple target conditions account for 86 percent of the preventable hospitalizations attributed to these four conditions, making a strong case for better coordination of outpatient care.
Hospital Readmissions* vs. Emergency Room Visits for Medicare Beneficiaries, by Number of Target Conditions, 2002

Proportion of Patients with...

- Hospital Readmissions
- Emergency Room Visits

<table>
<thead>
<tr>
<th>Number of Target Conditions</th>
<th>Hospital Readmissions</th>
<th>Emergency Room Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>1.9%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Two</td>
<td>6.5%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Three</td>
<td>16.8%</td>
<td>15.9%</td>
</tr>
<tr>
<td>Four</td>
<td>33.3%</td>
<td>31.4%</td>
</tr>
</tbody>
</table>

*A readmission occurs within 30 days of a previous discharge.

Source: Gerard F. Anderson, PhD, Johns Hopkins Bloomberg School of Public Health. Analysis of utilization and cost data for Medicare beneficiaries derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF), 2002.
Definitions and Explanations

California Health Information Survey (CHIS): CHIS is a randomized telephone survey of California households designed to gather information about the health of Californians. CHIS is conducted by the UCLA Center for Health Policy Research in collaboration with the California Department of Health Services and the Public Health Institute. CHIS covers a wide range of topics, including health status, health conditions, health-related behaviors, health insurance coverage, access to and use of health care services, and the health and development of children and adolescents. For more information about the CHIS survey, please refer to: www.chis.ucla.edu.

Chronic Conditions: Chronic conditions are medical conditions that last a year or longer, limit what you can do, and/or may require ongoing medical care. A team of physicians from Johns Hopkins classified medical conditions as being either chronic or acute. The Agency for Healthcare Research and Quality (AHRQ) independently grouped medical conditions into 131 unique, multi-level homogenous categories, such as diabetes or congestive heart failure. Using this definition of chronic conditions and the AHRQ categorizations of unique conditions, it is possible for one person to have multiple chronic conditions.

Medical Expenditure Panel Survey (MEPS): The Agency for Healthcare Research and Quality (AHRQ) conducts the MEPS in conjunction with the National Center for Health Statistics (NCHS); Westat, a survey research firm headquartered in Washington, DC; and the National Opinion Research Center, which is affiliated with the University of Chicago. MEPS data can be used to produce national and regional estimates of health care use, expenditures, sources of payment, and insurance coverage of the U.S. civilian non-institutionalized population. For more detail on MEPS, refer to: www.meps.ahrq.gov.

Medicare Standard Analytic Files Data (Medicare 5 percent data): Utilization and cost data for Medicare beneficiaries are derived from the Center for Medicare and Medicaid Services (CMS) 5 percent standard analytic files (SAF). These files represent a 5 percent sample of patient claims for both institutional (inpatient, SNF, and Outpatient and home health) and non-institutional (physician/supplier) data. An additional file contains data on beneficiary eligibility and demographic characteristics (denominator file). Persons in the SAF files represent a random sample from the universe of processed claims (the National Claims History file). For more information, refer to www.cms.hhs.gov. Please note that Medicare beneficiaries with end-stage renal disease and disabilities have been excluded from this analysis.
Definitions and Explanations, cont.

Target Conditions

For MEPS and Medicare 5 percent data, the following categories were used to define each target condition:

- **COPD/Asthma** includes CCS* multi-level groups 8.2 and 8.3.
- **Diabetes** includes CCS multi-level groups 3.2 and 3.3.
- **Heart Disease** includes CCS multi-level group 7.2.
- **Hypertension** includes CCS multi-level group 7.1.

*The AHRQ CCS system is described in more detail at [http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp](http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp).

For CHIS data, the following survey questions were used to categorize target conditions:

- **COPD/Asthma**: “Has a doctor ever told you that you have asthma?”
  (This question excludes all other chronic obstructive pulmonary conditions.)
- **Diabetes**: “Other than during pregnancy, has a doctor ever told you that you have diabetes or sugar diabetes?”
- **Heart Disease**: “Has a doctor ever told you that you have any kind of heart disease?”
- **Hypertension**: “Has a doctor ever told you that you have high blood pressure?”
Resources


California Health Interview Survey. www.chis.ucla.edu


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