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Cost Drivers for Dually Eligible Beneficiaries: Potentially Avoidable Hospitalizations from Nursing Facility, Skilled Nursing Facility, and Home and Community- Based Services Waiver Programs

Final Task 2 Report

Prepared for

Apryl C. Clark, MHSA
Centers for Medicare & Medicaid Services
Office of Office of Policy
200 Independence Ave, SW
Mailstop 337D
Washington, DC 20201

Prepared by

Edith G. Walsh, PhD
Marc Freiman, PhD
Susan Haber, ScD
Arnold Bragg, PhD
Joseph Ouslander, MD
Joshua M. Wiener, PhD
RTI International
1440 Main Street, Suite 310
Waltham, MA 02451

RTI Project Number 0209853.022



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Edith G. Walsh, PhD, Project Director
Marc Freiman, PhD
Susan Haber, ScD
Arnold Bragg, PhD
Joseph Ouslander, MD
Joshua M. Wiener, PhD

Federal Project Officer: Apryl Clark

RTI International

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EXECUTIVE SUMMARY

E.1 Overview

Medicare and Medicaid dually eligible beneficiaries are low-income elderly and disabled Medicare beneficiaries who receive assistance with their Medicare premiums and cost sharing, and also receive certain Medicaid benefits based on their income and their states' Medicaid eligibility standards and coverage provisions. Many dually eligible beneficiaries gain Medicaid eligibility because of their use of expensive nursing home or home care. Largely as a result of their poor health, dually eligible beneficiaries utilize a disproportionate share of medical resources and spending as compared to other Medicare beneficiaries. The 18% of Medicare beneficiaries who were dually eligible in 2006 accounted for 24% of Medicare expenditures. While only 16% of Medicaid beneficiaries were dually eligible in 2006, they accounted for 46% of Medicaid spending, principally due to the high costs of long-term care.

This report focuses on a key element of Medicare spending—hospitalizations of Medicare and Medicaid dually eligible beneficiaries receiving long-term care services in nursing facilities or as enrollees in Medicaid home and community-based services (HCBS) waiver programs for the aged or disabled or receiving post-acute care in skilled nursing facilities. Reducing the incidence of potentially avoidable hospitalizations from these settings—either by preventing conditions warranting hospitalization or by managing conditions at home or in nursing facilities—has the potential to substantially reduce Medicare costs, as well as improve health outcomes and beneficiaries' quality of life. Information about the expenditures incurred for potentially avoidable hospitalizations may motivate quality improvement and educational activities, and stimulate consideration of regulatory and payment policy changes. It may also motivate ways to improve coordination and integration of Medicare and Medicaid. Information about the specific conditions and predictors of potentially avoidable hospitalizations may guide these activities. The Patient Protection and Accountable Care Act and the Health Care and Education Affordability Act include several provisions designed to reduce potentially avoidable hospitalizations, including the payment bundling pilot program, penalties for hospitals with high rates of rehospitalizations, and new requirements for special needs plans.

E.2 Methods

This report presents descriptive data regarding rates of potentially avoidable hospitalizations and associated Medicare and Medicaid costs for the dually eligible beneficiaries in Medicaid-covered nursing facility stays, Medicare-covered skilled nursing facility stays, and aged or disabled Medicaid HCBS waiver programs. It also includes multivariate analyses assessing the impact of various factors on potentially avoidable hospitalization. Results are presented for dually eligible beneficiaries in these settings as a whole and separately, by chronic condition, nationally and by state, and by various demographic characteristics.

To conduct these analyses we developed a comprehensive list of conditions associated with potentially avoidable hospitalizations (and their associated ICD-9 codes) for nursing facility residents and for enrollees in Medicaid HCBS waiver programs for aged or disabled beneficiaries, based on input from experts in geriatrics, ambulatory care sensitive conditions, and other quality measures. We identified a subset of this list as most appropriate for use in analyzing

utilization and costs for HCBS waiver enrollees, to reflect the lower levels of support available to them compared to beneficiaries in nursing facilities or skilled nursing facilities. We created a linked data set incorporating 2005 Medicare and Medicaid claims, eligibility data regarding dual eligibility, and other data sources to calculate hospitalization rates and costs of potentially avoidable hospitalizations that are all elements of the CMS Chronic Condition Data Warehouse (CCW). We also incorporated state Medicaid policy characteristics, facility characteristics, and measures of area supply and demand for health care services from other data sources including the Online Survey and Certification Reporting System (OSCAR), and the Area Resource File.

E.3 Key Findings

In 2005 1.6 million persons who were dually eligible for Medicaid and Medicare spent some of that year in a Medicaid-covered nursing facility stay, a Medicare-covered skilled nursing facility stay, in the community on a Medicaid HCBS waiver for the aged or disabled, or some combination of these.

More than one-third of dually eligible beneficiaries in a long-term care or skilled nursing facility setting were hospitalized from these settings at least once, totaling almost 1 million hospitalizations. Of these hospitalizations, 382,846, or 39%, may have been avoidable, either because the condition might have been prevented, or because the condition might have been treated in a lower level of care setting than a hospital. These potentially avoidable hospitalizations include 241,000 hospitalizations (63%) originating from a Medicaid-covered nursing facility stay, 73,000 (19%) from a Medicare-covered skilled nursing facility stay, and 69,000 (18%) from a Medicaid HCBS waiver for the aged or disabled. **Table ES-1** provides summary information about the number of dually eligible beneficiaries in these settings in 2005, the number of potentially avoidable hospitalizations in total and by setting, potentially avoidable hospitalization rates, length of stay, and the costs of these hospitalizations.

Five conditions (pneumonia, congestive heart failure, urinary tract infections, dehydration, and chronic obstructive pulmonary disease/asthma) were responsible for 78% of the potentially avoidable hospitalizations across settings. In both Medicare covered skilled nursing facility stays and Medicaid covered nursing facility stays, pneumonia accounted for over 30% of potentially avoidable hospitalizations.

Dually eligible beneficiaries in Medicaid HCBS waiver programs had high rates of overall hospitalizations and potentially avoidable hospitalizations. Although the reduced list of hospitalizations was most appropriate for evaluating potentially avoidable hospitalization rates from HCBS programs, we also calculated the rates using the full list of conditions to understand more about the medical needs of this population. The potentially avoidable hospitalization rates were 408 per 1,000 person years for enrollees in Medicaid HCBS waiver programs using the full condition list, and 250 per 1,000 person years using the more restricted list of conditions. These high rates of hospitalizations suggest that this long-term care population has high medical needs as well as supportive services needs.

Table ES-1
Summary results for potentially avoidable hospitalizations for dual eligible beneficiaries receiving nursing facility, skilled nursing facility, and Medicaid home and community-based services waiver services, 2005

Category	All groups combined	Beneficiaries receiving Medicaid nursing facility services	Beneficiaries receiving Medicare skilled nursing facility services	Beneficiaries receiving Medicaid aged or disabled HCBS waiver services ^(b)
Population	1,571,920	1,087,037 ^a	560,908 ^a	373,637 ^a
Total hospitalizations	958,837	516,341	174,634	267,862
Potentially avoidable hospitalizations	382,846	240,753	73,468	68,625
Total hospitalization costs for potentially avoidable hospitalizations (in billions)	\$3.127	\$1.927	\$.738	\$.463
Potentially avoidable hospitalization rate (per 1,000 person-years)	360	338	942	250
Average length of stay for potentially avoidable hospitalizations (days)	6.7	6.6	8.4	5.5
Average Medicare hospitalization cost for potentially avoidable hospitalizations	\$7,846	\$7,661	\$9,792	\$6,415
Average Medicaid hospitalization cost for potentially avoidable hospitalizations	\$321	\$343	\$249	\$325

^a Categories are not mutually exclusive; individuals may be in more than one category at some point in 2005. However, each hospitalization is only counted once, in the category defined by the day immediately preceding hospital admission.

^b A reduced list of conditions for potentially avoidable hospitalizations of beneficiaries using Medicaid HCBS waiver services was used to reflect the appropriateness of hospitalizations for some conditions for frail elders or people with disabilities living at home.

NOTE: HCBS = home and community-based services.

The Medicare program bears the vast majority of the costs of potentially avoidable hospitalizations for dually eligible beneficiaries. In 2005, the total Medicare costs of these potentially avoidable hospitalizations were \$3 billion compared to only \$463 million for Medicaid. On average, Medicare paid \$7,846 per hospitalization, while Medicaid paid only \$321. This reflects structural differences in Medicare and Medicaid benefits and makes clear the underlying incentive for cost shifting between these programs and settings.

Potentially avoidable hospitalization rates vary greatly by state. Across all settings, there is almost a fourfold difference from the lowest (158 per 1,000 person years) to the highest rate of potentially avoidable hospitalizations (591 per 1,000 person years). To some extent this disparity reflects differences in health status; for example, the mean number of chronic conditions by state varies from 1.9 to 3.3 and the percentage aged 85 and older ranges from 20% to 47% of the study population. The large variation in potentially avoidable hospitalizations suggests that there is room for improvement in hospitalization rates for these conditions.

State policy variables affect the rate of potentially avoidable hospitalizations in the HCBS population. Although some of our findings are not consistent with those of previous researchers (e.g., the impact of bed hold policies, Intrator et al., 2007), our multivariate analysis demonstrates that HCBS waiver enrollees in states spending a higher proportion of their Medicaid long-term care dollars on HCBS (an indicator of a better developed HCBS program) and covering Medicaid state-plan personal care services were at less risk of potentially avoidable hospitalizations compared to states without a personal care option or spending a smaller proportion of their LTC dollars on HCBS.

Potentially avoidable hospitalization rates by race/ethnicity vary in all settings, and these differences persist even controlling for various factors. Hospitalization rates, hospital length of stay, and hospitalization costs all vary by race and ethnicity. Nonwhite dually eligible beneficiaries have higher rates of potentially avoidable hospitalizations compared to whites in all settings, and Hispanic individuals have higher rates from nursing facilities or skilled nursing facility stays, but lower rates for HCBS waivers for all ages and dually eligible beneficiaries aged 65 and over, but not under age 65.

SECTION 1 INTRODUCTION

This report focuses on a key element of Medicare spending—hospitalizations of Medicare and Medicaid dually eligible beneficiaries receiving long-term care services in nursing facilities or as enrollees in Medicaid home and community-based services (HCBS) waiver programs for the aged or disabled, or receiving post-acute care in skilled nursing facilities. Reducing the incidence of potentially avoidable hospitalizations from these settings—either by preventing conditions warranting hospitalization or by managing conditions at home or in nursing facilities—has the potential to substantially reduce Medicare costs, as well as improve health outcomes and beneficiaries’ quality of life. Information about the expenditures incurred for potentially avoidable hospitalizations may motivate quality improvement and educational activities, and stimulate consideration of regulatory and payment policy changes. It may also foster improvements in coordination and integration of Medicare and Medicaid. Information about the specific conditions and predictors of potentially avoidable hospitalizations may guide these activities. The Patient Protection and Accountable Care Act and the Health Care and Education Affordability Act include several provisions designed to reduce potentially avoidable hospitalizations, including the payment bundling pilot program, penalties for hospitals with high rates of rehospitalizations, and new requirements for special needs plans.

1.1 Potentially Avoidable Hospitalizations

The concept of potentially avoidable hospitalization builds on the notion of ambulatory care sensitive conditions—conditions such as asthma and diabetes that should not often result in hospitalization if individuals receive adequate ambulatory care. Potentially avoidable hospitalization in long-term care is broader, however, including hospitalizations that result from inadequate assistance with activities of daily living and instrumental activities of daily living (Sands, Wang et al. 2006), deficient monitoring and treatment of chronic conditions, and inadequate responses to acute conditions that could, at least under optimal conditions, be addressed within the facility or home (Ouslander et al., 2010). Thus, these are hospitalizations that should not have occurred and, in theory, are preventable.

While identifying potentially avoidable hospitalizations is relatively straightforward from a research perspective, in practice, these hospitalizations are not always avoidable due to either clinical necessity or contextual factors. Clinical factors such as the presence of comorbid conditions, disease severity, or other risk factors may necessitate a hospitalization. A frail beneficiary living alone, even with HCBS and home health services, may develop problems or require hospitalization to address a serious medical problem because of the inherent limitations of community-based care.

1.2 Dually Eligible Beneficiaries

Medicare and Medicaid dually eligible beneficiaries are low-income elderly and disabled Medicare beneficiaries who also receive certain Medicaid benefits based on their income and their state’s Medicaid eligibility standards and coverage provisions. Many dually eligible beneficiaries gained Medicaid eligibility because of their use of expensive nursing home or home care. The 18% of Medicare beneficiaries who were dually eligible in 2006 accounted for 24% of Medicare expenditures (Kaiser Commission, 2009). While only 16% of Medicaid beneficiaries

were dually eligible in 2006, they accounted for 46% of Medicaid spending due to the high costs of long-term care (Kaiser Commission, 2009).

Beneficiaries with dual eligibility are entitled to varying benefits depending on their income. For full-benefit dually eligible beneficiaries, states pay Medicare premiums for Part B and Part D and Medicare copays and deductibles; they are entitled to all Medicaid state plan services and may qualify for HCBS waivers if they need institutional level of care. States determine whether full benefit dual eligibility income limits are set at SSI eligibility (74% of the federal poverty level), a lower income level, at 100% of the federal poverty level, or if individuals with high medical expenses, including institutional care, may qualify as medically needy (Kaiser Commission, 2004). Other dually eligible beneficiaries receive varying degrees of Medicaid assistance with Medicare premiums, copays and deductibles, but do not qualify for additional services paid for by Medicaid. Full-benefit dually eligible beneficiaries are the focus of this report. Clinical or functional eligibility for specific settings (e.g., nursing facility care and HCBS waiver programs) also varies across states. Nursing home level of care criteria are determined by each state as is waiver eligibility, resulting in differences in the characteristics of those in nursing homes and in HCBS waiver programs (Hendrickson & Kyzr-Sheeley, 2008) State HCBS waiver programs also vary in the types and amounts of services they provide. Thus, while full-benefit dually eligible beneficiaries in these settings are a discrete subset of the Medicare population, their characteristics vary across states.

In addition to a focus on the high level of expenditures for dually eligible beneficiaries, policymakers are concerned about the quality and efficiency of the care provided under Medicare and Medicaid. Dually eligible beneficiaries receive acute care hospital services primarily through Medicare and long-term care services, including facility-based or community-based care through Medicaid. Reducing potentially avoidable hospitalizations in the long-term care and skilled nursing facility populations has a direct affect on Medicare expenditures because Medicare is the primary payer for acute care hospitalizations. However, the impact of reducing potentially avoidable hospitalizations on Medicaid is less clear. Although Medicaid must pay the Medicare hospital deductible for dually eligible beneficiaries, days spent in the hospital rather than in a nursing home or receiving community services provide cost savings to Medicaid. In addition, many efforts to reduce hospitalizations for the long-term care population may require additional Medicaid expenditures for such initiatives as increasing nursing facility staffing or home and community-based services.

States may lack financial incentives to address potentially avoidable hospitalizations, and providers may not have the resources to meet their patients' needs. When faced with an increase in the medical complexity or intensity of care for a resident, nursing homes may have incentives to shift treatment to hospitals. Similarly, HCBS programs may realize cost savings while their enrollees are in the hospital or receiving post-acute care services because they are not receiving Medicaid services. In addition, the array and amount of in-home services available or the quality of case management may be inadequate to prevent or manage some medical conditions at home.

1.3 Strategies to Reduce Potentially Avoidable Hospitalizations

Several strategies have been proposed to reduce potentially avoidable hospitalizations. For example, programs designed to address these issues include the Program of All-inclusive

Care for the Elderly and other fully integrated programs such as Minnesota Senior Health Options, Minnesota Disability Health Options, the Wisconsin Partnership Program, and Massachusetts Senior Care Options plans. These organizations integrate capitation payments from Medicare and Medicaid, using these funds to provide the full range of acute and long-term care services. These models are intended to promote service integration, improve care coordination, and maximize quality and efficiency while eliminating cost-shifting.

Another strategy is to increase nursing facility staffing levels and the involvement at home or in facilities of physicians, nurse practitioners, or physician assistants who know the patients and can ensure careful monitoring of clinical status and early intervention if problems develop (Ouslander et al., 2010). Specific technical capabilities within the nursing home or the community may also prevent hospitalizations, such as the ability to start and continue intravenous fluids or use subcutaneous fluids (hypodermoclysis). Readily available and responsive ancillary services (lab testing, pharmacy) may help quickly identify problems and provide timely treatment. The use of advance directives and increased provision of palliative care or hospice services may decrease hospitalizations at the end of life that have no clinical benefits. Concerns about liability, including criticisms by regulators, may also influence the likelihood of hospitalization and may be amenable to change (Ouslander et al., 2010; (Saliba, Kington et al. 2000). The Evercare model, which receives capitated Medicare payments for nursing facility residents who choose to enroll, supports increased medical monitoring and intervention and the use of advance directives within the nursing facility as a cost-effective means to reduce expensive hospitalizations (Kane, 2003).

1.4 Plan of the Report

This report presents descriptive data regarding rates of potentially avoidable hospitalizations and associated Medicare and Medicaid costs for the dually eligible beneficiaries in Medicaid-covered nursing facility stays, Medicare-covered skilled nursing facility stays and aged or disabled Medicaid HCBS waiver programs, and multivariate analyses evaluating the role of various factors in predicting potentially avoidable hospitalization rates. Results are presented for dually eligible beneficiaries in these settings as a whole and separately, by chronic condition, nationally and by state, and by various demographic characteristics.

To conduct these analyses we developed a comprehensive list of conditions associated with potentially avoidable hospitalizations (and their associated ICD-9 codes) for nursing facility residents and for enrollees in Medicaid HCBS waiver programs for aged or disabled beneficiaries. We identified a subset of this list as most appropriate for use in analyzing utilization and costs for HCBS waiver enrollees, to reflect the lower levels of support available to them compared to beneficiaries in nursing facilities or skilled nursing facilities. We created a linked data set incorporating 2005 Medicare and Medicaid claims, eligibility data regarding dual eligibility, and other data sources to identify hospitalization rates and costs of potentially avoidable hospitalizations. We also incorporated state Medicaid policy characteristics, facility characteristics, and measures of supply and demand for health care services from other data sources including the Online Survey and Certification Reporting System (OSCAR), and the Area Resource File.

The first chapters of this report describe the data, study population selection, and file construction processes, the process for determining potentially avoidable hospitalizations for these analyses, and the conditions we selected and used in the analyses. These chapters are followed by the descriptive results of the study population and potentially avoidable hospitalization rates and costs, and chapters describing the results of the multivariate analyses and our conclusions. The appendices include a detailed list of the ICD-9 codes used in the analyses, materials describing conditions used in previous studies of potentially avoidable hospitalizations, and tables providing additional state-level results.

SECTION 2 METHODS

2.1 Data

The analyses are based on data for 2005 from a number of sources, summarized in **Table 1**. The primary data are linked Medicare and Medicaid data for dually eligible beneficiaries. These data are supplemented by data on nursing facility characteristics, as well as data on state Medicaid program characteristics and contextual data on the population and provider supply. Dually eligible beneficiaries were identified using a finder file created by CMS that includes individuals identified as having any type of dual eligibility (full or limited Medicaid benefits) in the Medicaid Analytic eXtract (MAX) file. The following section on the study population describes the procedures RTI used to subset the total population of dually eligible beneficiaries to those included in the analyses.

Table 1
Data sources and variables

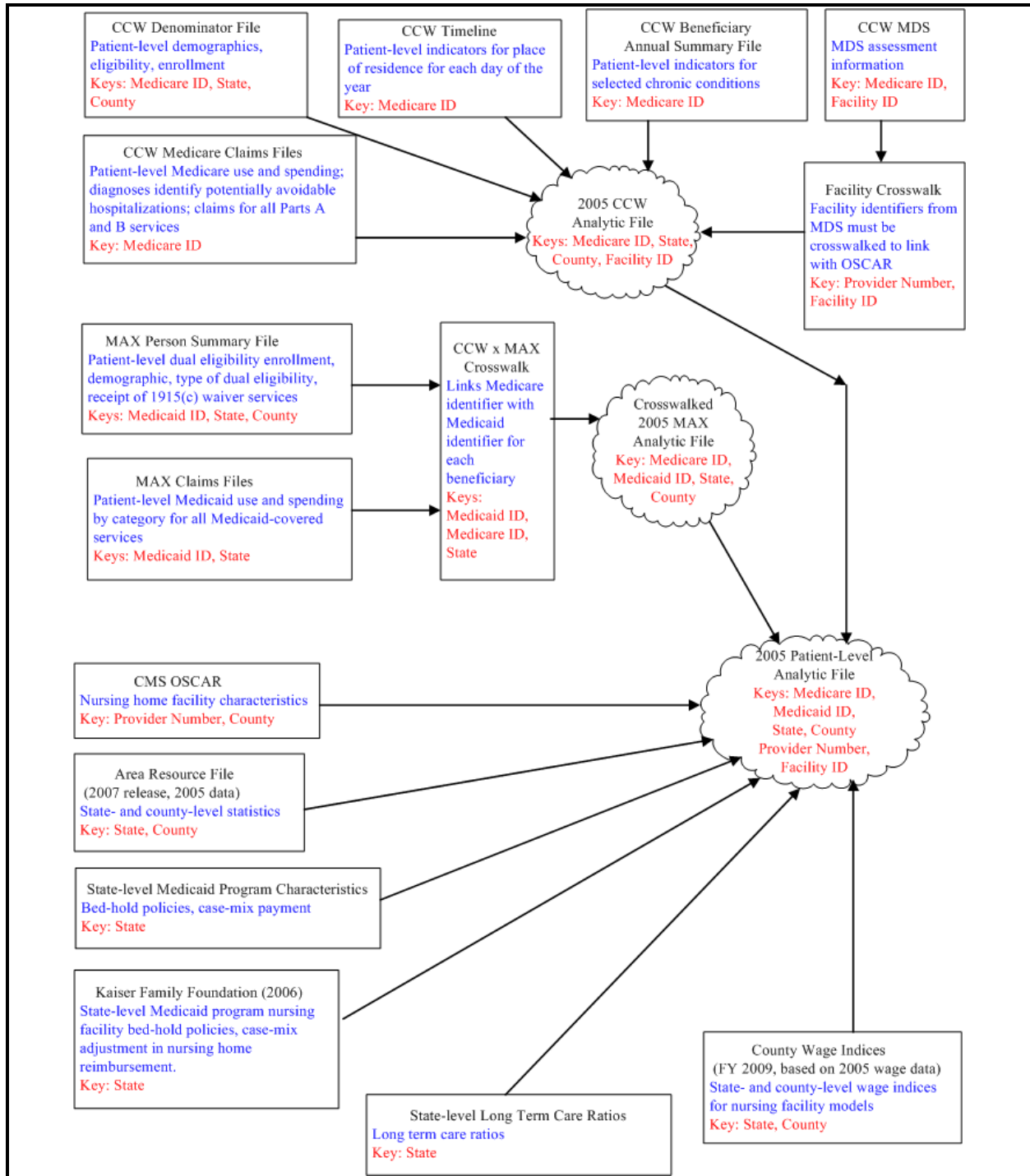
Data source	Types of variables
2005 CCW Denominator File	Demographics, enrollment in managed care
2005 CCW Medicare Claims Files	Medicare use and spending by category; diagnoses to identify potentially avoidable hospitalizations
2005 CCW Timeline	Indicator for place of residence each day of the year
2005 CCW Beneficiary Annual Summary File	Indicators for selected chronic conditions
2005 MAX Person-Level File	Dual eligibility enrollment information and type of dual eligibility, enrollment in home and community-based waivers and waiver type, enrollment in managed care
2005 MAX Claims Files	Medicaid use and spending by category
OSCAR	Nursing facility characteristics
MDS	Facility identifiers, used to link with OSCAR data
Area Resource File	Population and provider supply characteristics
Constructed dataset for state-level Medicaid program characteristics	Bed-hold policies, case-mix payment

CCW = Chronic Condition Data Warehouse; MAX = Medicaid Analytic eXtract; MDS = Nursing Home Minimum Data Set; OSCAR = Online Survey and Certification Reporting data.

Figure 1 shows the data sources used to create the patient-level file used in these analyses. The source files are depicted in rectangular boxes. The variables extracted from each source file are shown. The variables used as keys for linking with other data files are also identified for each source file. CMS provided RTI with Medicare data extracted from the Chronic Condition Warehouse (CCW) file and Medicaid data extracted from the MAX file for all dually eligible beneficiaries in 2005. RTI linked CCW and MAX data using the MSIS ID to Buccaneer BENE ID cross-walk file that cross-walks the unique CCW identifier for each Medicare beneficiary to Medicaid ID numbers in the MAX data for dually eligible beneficiaries. Data on nursing facility characteristics in the OSCAR file were linked through facility identifiers

on the MDS records in the CCW. Constructed data on state-level Medicaid program characteristics and county-level contextual characteristics were linked using state and county identifiers in the CCW. Further details on these data sources are provided below.

Figure 1
Data Sources



In some cases, a CCW identifier cross-walked to more than one Medicaid ID. These cases were resolved as part of the linkage process. The most common scenario was a CCW identifier that cross-walked to more than one Medicaid ID within the same state. In most cases the dates of birth in the MAX person summary file records associated with these Medicaid IDs had an exact or close match (date of birth within 31 days of each other or same day and month but different years). We assumed that multiple Medicaid IDs had erroneously been assigned to the same person and our file construction incorporated Medicaid claims associated with all of the Medicaid IDs for these individuals. Cases where the dates of birth did not have an exact or close match were dropped from the analyses. Cases where a CCW identifier cross-walked to Medicaid IDs in more than one state were kept because individuals might have been eligible for Medicaid in more than one state, for example, if they moved during the year. The MAX records for these cases were rolled up in final analytic file construction process. There were no cases where a Medicaid ID cross-walked to more than one CCW identifier; however, there were multiple denominator file records for some values of the CCW identifier. If the beneficiary date of birth and sex matched on the denominator file records, we assumed that the records were for the same individual and the denominator file record with the larger value of the state buy-in months variable was kept. We dropped observations where the date of birth and sex did not match on the denominator file records. The number of observations dropped during the linkage process is summarized in the following section on the study population.

CCW Data. The CCW is a patient-level database that includes Medicare beneficiaries with and without chronic conditions. The CCW combines Medicare administrative data, along with additional datasets such as assessment data. Data are linked using a unique identifier for each Medicare beneficiary based on cross-referenced IDs for beneficiaries with multiple HIC numbers. The following CCW files were used in these analyses:

- Medicare denominator file—person-level file with demographic, eligibility, and enrollment information
- Medicare claims files—claims for all Parts A and B services
- Beneficiary Annual Summary File (BASf)—person-level file with information on eligibility, enrollment, vital statistics, summarized service utilization, and indicators for presence of 21 common chronic conditions
- Timeline file—person-level file with indicators for place of residence each day of the year (deceased, inpatient hospital [based on Medicare claims], skilled nursing facility [based on Medicare claims], home health agency [based on Medicare claims], home health agency [based on OASIS assessments], nursing facility [based on MDS assessments], or community [enrolled in Medicare and not in any of the previous categories])

The Timeline file is the basis for a residential timeline used to identify potentially avoidable hospitalizations for nursing facilities residents and persons in the community receiving home and community-based waiver services.

MAX Data. MAX is a uniform set of files that have been standardized across states and include data on Medicaid eligibility, service utilization, and payments. The following MAX files were used in these analyses:

- Person-summary file—person-level file with demographic and Medicaid eligibility and enrollment information, including type of dual eligibility and receipt of 1915(c) waiver services
- Medicaid claims files—claims for all Medicaid-covered services, including inpatient hospital, physician, and long-term care

Other Databases. We incorporated nursing facility characteristics from the CMS OSCAR data by linking through facility identifiers on the MDS records in the CCW. These links to facility data cannot be performed more directly from Medicaid nursing facility claims, because the MAX data identify these facilities using state-provided IDs, not national IDs. We also used data from the Kaiser Family Foundation (2006) to construct variables for selected state Medicaid program policies, including whether nursing facilities were paid to hold a bed for a resident while hospitalized, whether nursing facility reimbursement used case-mix adjustment, and whether personal care services were covered. Data on population size and the supply of nursing home, skilled nursing facility, and hospital beds were obtained from the Area Resource File.

2.2 Study Population

The study population is limited to individuals who were dually eligible for Medicare and Medicaid in 2005 and who met the following criteria:

- Were full benefit dually eligible for at least 1 month during 2005 and did not have any months with partial benefits;
- Had Medicare Parts A and B coverage for all months during 2005 they were dually eligible beneficiaries;
- Were not enrolled in either a Medicare managed care plan or a Medicaid comprehensive managed care plan for any of the months during 2005 they were dually eligible beneficiaries;
- Had a single continuous period during 2005 when they met the preceding eligibility requirements (i.e., they continued to meet the requirements for the remainder of the year once the requirements were met or, if they no longer met the requirements, did not have a subsequent period when the requirements were met); and
- Received Medicaid-covered nursing facility services, Medicare-covered skilled nursing facility services, or Medicaid-covered 1915(c) home and community-based waiver services under waivers targeted at the elderly or disabled during 2005.

Beneficiaries who are not full benefit dually eligible beneficiaries (i.e., partial duals) are excluded because they are not eligible to receive the full range of Medicaid benefits, including

Medicaid-covered long-term care services. As a result, there is little interaction between the Medicare and Medicaid programs for their care. Beneficiaries who do not have Medicare Parts A and B coverage are excluded because they are not eligible to receive the full range of Medicare benefits. Individuals enrolled in a Medicare managed care plan or a Medicaid comprehensive managed care plan are excluded because complete information on their service utilization and costs is not available from claims data. In addition, this study focuses on the fee-for-service population since the overwhelming majority of dually eligible beneficiaries are enrolled in fee-for-service. Individuals with multiple, discontinuous periods during which they meet the Medicare and Medicaid eligibility requirements for the study are excluded to reduce complexities in analyzing service utilization patterns. Less than 3% of full benefit dually eligible beneficiaries were excluded by this requirement.

Individuals who have some period during the year when they are not dually eligible (either because they are enrolled in Medicare only or in Medicaid only or are not eligible for either program) are not excluded from the analyses. These persons who are not dually eligible for the full year may differ in important ways from full-year dually eligible beneficiaries. However, analyses will be limited to utilization during the months an individual is a full benefit dually eligible beneficiary. Individuals who died during the year also are included.

Monthly indicators for full benefit dual eligibility and entitlement to Medicare Parts A and B were created using two monthly data elements in the MAX person summary file: (1) a variable for whether the individual was covered by Medicare during the month (based on records in the Medicare Enrollment Data Base) and (2) a variable for the scope of Medicaid benefits to which an individual is entitled during the month. A person is categorized as being a full benefit dually eligible beneficiary if he/she was: (1) enrolled in Medicare Parts A and B during the month (eligible Medicare beneficiary code = 1), and (2) eligible for Medicaid during the month and entitled to the full scope of Medicaid benefits (eligible restricted benefits flag = 1).

Enrollment in Medicare managed care was identified from a monthly variable in the denominator file (HMO enrollment indicator not equal to 0). Enrollment in a Medicaid managed care plan was identified from monthly prepaid plan type variables in MAX. Individuals were categorized as enrolled in Medicaid managed care if they were enrolled in a medical or comprehensive managed care plan, a long-term care managed care plan, or a Program of All-Inclusive Care for the Elderly plan (prepaid plan type = 01, 05, or 06). We did not exclude individuals enrolled in prepaid plans that reimburse providers on a fee-for-service basis (e.g., primary care case management) or that capitate providers for a limited range of services that are not relevant to these analyses (e.g., dental, behavioral health, or transportation services). In a few states (Alabama, Illinois, Mississippi, Wisconsin, California, Florida, and South Carolina) individuals enrolled in a managed care plan categorized as “other” (prepaid plan type = 08) were classified as enrolled in Medicaid managed care either because the plan capitates providers for important services (e.g., in Alabama this category included prepaid plans that capitate inpatient services) or the scope of services covered by these plans was unknown. Individuals enrolled in selected managed care plans categorized as “other” in Oklahoma were excluded for the same reason. In addition, individuals whose managed care plan status was unknown (prepaid plan type = 99) were excluded because the range of services covered and the reimbursement mechanisms were not known.

The CCW Timeline file is the basic data source to identify individuals residing in a nursing facility (Medicaid payment) or a skilled nursing facility (Medicare Part A). The Timeline file has daily indicators for whether a person is receiving nursing facility, skilled nursing facility, inpatient hospital, or home health agency services. An individual enrolled in Medicare who is not receiving any of these services or is deceased is identified as residing in the community on that day. We augmented the Timeline file using monthly waiver type variables in the MAX person summary file to identify the dates that individuals received Medicaid home and community-based waiver services targeted to the aged and disabled, aged, or physically disabled populations (waiver type code = G, H, or I). Days in the Timeline file where the individual was identified as receiving home health agency services or as residing in the community were replaced with an indicator for receiving home and community-based waiver services based on the monthly indicators in the MAX data. To create daily indicators, we assumed that individuals were enrolled in home and community-based waivers every day of the months they are enrolled.

The monthly waiver type variables in the MAX person summary file that were used to identify enrollment in home and community-based waivers were new in the 2005 MAX data and their quality was unknown. As a check on their quality, we compared enrollment in home and community-based waivers based on the MAX waiver type variable with waiver enrollment numbers compiled from CMS Form 372 by the Center for Personal Assistance Services (http://www.pascenter.org/state_based_stats/pick_a_state.php?url=http%3A%2F%2Fwww.pascenter.org%2Fstate_based_stats%2Fmedicaid_waiver_2005.php&title=Medicaid%20c%20Waiver%20Data%20by%20State). Differences between the number of individuals enrolled in home and community-based waivers targeted to aged and disabled, aged, or physically disabled populations based on the MAX waiver type variable and those based on Form 372 were largely explained by the exclusion of managed care enrollees from the MAX counts. However, there were substantial differences in the distribution of enrollees between the three waiver populations. Therefore, the aged and disabled, aged, and physically disabled waiver populations are combined in these analyses.

We excluded several states from some or all of the analyses because of data issues or an exceptionally high rate of Medicaid managed care. Arizona is excluded from the analyses because 91% of full benefit dually eligible beneficiaries are enrolled in Medicaid managed care. Maine did not submit Medicaid claims data in 2005 and was, therefore, also excluded. New York, Washington, and Wisconsin are excluded from the analyses of individuals receiving home and community-based waiver services because MAX data for these states did not report enrollment in these waiver programs. However, these three states are included in the nursing facility analyses because the data required for these analyses were reported.

The MAX data, which we used to identify full benefit dually eligible beneficiaries, were the starting point for the construction of the analytic file for the study population. The MAX data provided by CMS included 8,986,928 individuals who were dually eligible in 2005. The size of the final study population was 1,571,920. Following is a summary of the number of beneficiaries dropped due to the study population requirements and during the process of linking CCW and MAX data, listed in the order in which exclusions were applied.

- Beneficiaries in Arizona and Maine—187,401

- Beneficiaries with more than one Medicaid ID in the same state that could not be resolved, with more than one denominator file record that could not be resolved, or without a match in the denominator file—51,380
- Beneficiaries with no months with full benefit dual eligibility and Medicare Parts A and B coverage or with any months of partial benefits—2,099,317
- Beneficiaries enrolled in Medicaid or Medicare managed care during any months with full benefit dual eligibility—841,138
- Beneficiaries with more than one spell of full benefit dual eligibility during the year—142,512
- Beneficiaries with no record in the CCW timeline file; also rolled up MAX records for beneficiaries where the CCW identifier cross-walked to Medicaid IDs in more than one state—87,022
- Beneficiaries who did not receive Medicaid-covered nursing facility services, Medicare-covered skilled nursing facility services, or Medicaid-covered 1915(c) home and community-based waiver services under waivers targeted at the elderly or disabled—4,006,238

2.3 Construction of Data for Inpatient Hospital Stays

On the CCW timeline, an inpatient hospital stay is indicated by one or more consecutive daily location indicators with the letter “I.” One adjustment was made to this definition of an inpatient stay: if a person has one or more consecutive inpatient days, followed by one non-inpatient day, followed immediately by one or more consecutive inpatient days, we treated this as a single inpatient stay. Specifically, we changed the one intervening day to inpatient (“I”) and concatenated the two inpatient stretches. We assumed that inpatients stretches separated by only one day were likely part of the same inpatient episode and the apparent break in inpatient days might be an artifact of the timing of a transfer between hospitals.

We then observed the day immediately preceding each inpatient stay on the timeline, and this preceding day determined whether a hospitalization was “from” a skilled nursing facility stay, a Medicaid nursing facility stay, a day of home and community-based services waiver participation, or some other type. Hospitalizations with “some other type” for the preceding day were excluded from the analyses in this report.

In order to obtain more detailed data for hospitalizations, we used Medicare inpatient claims data, and at a second stage, other Medicare and Medicaid claims data. For each Medicare inpatient claim, we took the admission and discharge dates and compared these to the dates for each hospital stay on that individual’s enhanced timeline. If the Medicare claim overlapped for at least one day with a timeline hospital stay that originated from a skilled nursing facility stay, a Medicaid nursing facility stay, or a period of waiver participation, that Medicare claim was added to a file of Medicare inpatient claims for use in this analysis.

If more than one Medicare inpatient claim overlapped with a single CCW timeline inpatient stay (as might happen with a transfer from one hospital to another hospital), then we used the following procedure. We compared the start dates of the Medicare inpatient claims, and chose the one with the earlier date as the base claim. This claim provided the diagnostic detail for the hospital stay for analytical purposes. We then compared the discharge dates, and changed the discharge date on the base claim to the later of the two discharge dates. Additionally, we added the costs of the “second” Medicare claim to the costs of the base claim to create a new total Medicare inpatient stay cost. Finally, we also examined all other Medicare and Medicaid claims, and for those whose dates of service overlapped with each given hospital stay, we added these costs to create an additional total cost variable.

The resulting dataset consists of all hospitalizations for dually eligible beneficiaries that originated from a skilled nursing facility stay, a Medicaid nursing facility stay, or a period of waiver participation, and provides data on the person’s location on the day just before the hospitalization, the person’s location on the day just after the hospitalization, as well as data on diagnoses, costs, and other variables on the claims that are not used in this analysis.

2.4 Calculating Hospitalization Rates

One can take the number of hospitalizations originating from nursing facilities and divide that number by the number of people who reside in nursing facilities to obtain a measure of hospitalizations per person. However, not all persons in our study population were in nursing facilities, on waivers, or in hospitals for the entire year. To phrase it another way, not all persons had a full year’s *exposure* to the risk of being hospitalized. A person in the analysis file may not have a full 365 days of exposure during the year for several reasons:

- A person may have not been dually eligible for part of the year.
- A person may have been dually eligible but for part of the year was neither in a Medicare skilled nursing facility, a Medicaid nursing facility, nor in the community on a Medicaid 1915(c) waiver.
- A person may have died during the year.

Therefore, to create a more precise measure of rates of potentially avoidable hospitalizations, we calculated hospitalization rates based on the duration of a person’s exposure to the risk of hospitalization. The exposure period incorporated the time when a person was actually hospitalized for the type of inpatient stay being studied, because the risk of hospitalization was actually realized during these days. This hospitalization rate is defined in more detail below.

The Numerator. This is the number of hospitalizations in the relevant category; for example, all hospitalizations for asthma from Medicaid nursing facility stays.

The Denominator. This is the duration of exposure for each person during 2005. This number comes from the timeline for ALL persons in the appropriate category, not just those with hospitalizations. To continue the example above, it would sum up the exposure for all persons

with Medicaid nursing facility stays. The length of this exposure is the sum of all days on the CCW timeline when the person was in the relevant residential category (in this example, days in a Medicaid nursing facility stay), plus all days (if they occurred) actually spent in an inpatient stay with a primary diagnosis of asthma. We then converted this measure of days to years by dividing it by 365.

The Hospitalization Rate. We then took the numerator and divided it by the denominator. In order to make the result more easily understood, we multiplied this ratio by 1,000 to give us a hospitalization rate per 1,000 person-years of exposure.

2.5 Comparisons Among Findings

The analyses presented in this report are based on the *universe* of relevant dually eligible beneficiaries, not a sample. Therefore, we present the descriptive results in this report without calculations of tests of statistical significance among different results. Such tests are based on error in estimating variables (such as means) that results from sampling variation. Differences in values presented in this report can be interpreted using criteria such as whether they are considered “clinically significant,” or “financially significant” (as can results that are based on sampling).

2.6 Multivariate Methods

2.6.1 Hazard Models

The multivariate analyses used survival analysis to estimate the impact of individual, facility, and market supply and demand characteristics on time until a potentially avoidable hospitalization occurs. Survival to time t (i.e., remaining in a nursing facility, skilled nursing facility, or HCBS waiver spell longer than time t without have a potentially avoidable hospitalization) is a function of the hazard of having a potentially avoidable hospitalization at time t given that a potentially avoidable hospitalization has not occurred up to that time. The survival rate and the hazard rate are integrally connected and hazard models are often used for multivariate survival analysis.

Survival analysis using a hazard model, rather than a logit or probit model to estimate the probability of having a potentially avoidable hospitalization, was selected because hazard models accommodate important features of the data used in these analyses. First, the analyses included data for 2005 only. Hazard models take into account the fact that individuals were observed for varying lengths of time during 2005 because they entered a nursing facility or skilled nursing facility or were enrolled in HCBS waivers at different points in the year. We expect that the probability of having a potentially avoidable hospitalization increased the longer a person was in a nursing facility or skilled nursing facility or enrolled in HCBS waivers. Second, hazard models account for censoring in the data. Censoring refers to the fact that we may not have a chance to observe whether an individual has a potentially avoidable hospitalization during a nursing facility, skilled nursing facility, or HCBS waiver spell because the data end before the event occurs. In these analyses, censoring may arise from three causes: (1) nursing facility, skilled nursing facility, or HCBS waiver spells may still have been in progress at the end of 2005 when our study period ended; (2) a nursing facility, skilled nursing facility, or HCBS waiver spell may

have ended for a reason other than a potentially avoidable hospitalization; or (3) a person may have died.

Multivariate analyses were conducted using Cox proportional hazard models to estimate the impact of the independent variables on the time to a potentially avoidable hospitalization. The Cox proportional hazard model can be written as:

$$h\{(t), (z_1, z_2, \dots, z_m)\} = h_0(t)\exp(b_1z_1 + \dots + b_mz_m)$$

where $h\{t\}$ denotes the hazard of having a PAH at time (t) conditional on having survived to time (t), given the values of the m covariates for an individual (z_1, z_2, \dots, z_m) . The term $h_0(t)$ is the *baseline hazard*, or the hazard for an individual when all independent variable values are equal to zero. The baseline hazard is not explicitly estimated.

The unit of observation is a nursing facility, skilled nursing facility, or HCBS waiver spell. Because a person could have more than one spell of a given type during the year, the standard errors of parameter estimates were adjusted to account for the fact that there were multiple observations for some individuals.

The dependent variable in the multivariate analyses is the number of days from the start of a nursing facility, skilled nursing facility, or HCBS waiver spell until a potentially avoidable hospitalization occurs. For censored observations where no potentially avoidable hospitalization is observed, the dependent variable is the number of days until the censoring event occurs. For example, for a person in a nursing facility who dies without having a potentially avoidable hospitalization, the dependent variable would be the number of days from the start of the nursing facility stay until death. The nursing facility and skilled nursing facility models used the full list of conditions identified in Section 3 to identify the date a potentially avoidable hospitalization occurred, while the HCBS waiver model used the reduced list of conditions identified in Section 3.

The multivariate analyses included nursing facility, skilled nursing facility, and HCBS waiver stays that began during 2005 to accurately measure time to a potentially avoidable hospitalization from the beginning of a stay. Stays that began prior to January 1, 2005, were excluded because we could not determine from the 2005 data when the stay actually started. For nursing facility, skilled nursing facility, and HCBS waiver stays that included January 1, 2005, we linked to the 2004 CCW timeline file to determine whether the stay began on January 1 or was ongoing in 2004. We did not include stays that began prior to January 1 even if we could observe their start date from the 2004 CCW file. Including these stays would bias the sample to long stays without a potentially avoidable hospitalization because only those who survived until 2005 without a potentially avoidable hospitalization would be eligible for inclusion. As a result of this restriction, the multivariate analyses excluded 692,520 nursing facility stays, 58,498 skilled nursing facility stays, and 310,242 HCBS waiver stays ongoing during 2005 that began prior to January 1, 2005. Because we observed at most one year for any stay, the estimates from the multivariate models represent effects only for the first year of a stay.

For each independent variable in the multivariate models, we present the coefficient (parameter estimate) and the hazard ratio. For dummy variables, a positive coefficient increases

the hazard of having a potentially avoidable hospitalization and indicates that a person with that characteristic is likely to have a potentially avoidable hospitalization sooner than a person without that characteristic, all other things being equal. For continuous variables, positive coefficient indicates that a person with a larger value of the variable is likely to have had a potentially avoidable hospitalization sooner than a person with a smaller value. Negative coefficients have the opposite interpretation. The hazard ratio equals e^{β} , where β is the coefficient estimated for that variable in the hazard function. The hazard ratio is the odds that a person with a characteristic will have had a potentially avoidable hospitalization before a person without that characteristic (or with a one-unit lower value of a continuous variable).

As a hypothetical example, assume that the coefficient on a state having a bed-hold policy is 0.693. The hazard ratio for bed-hold is $e^{0.693} = 2.0$. This means that the odds are 2 to 1 that a person in a state with a bed-hold policy will have a potentially avoidable hospitalization before a person in a state without a bed-hold policy. However, it does not mean that the person in a state with a bed-hold policy is twice as likely to be hospitalized.

2.6.2 Independent Variables

The independent variables and their construction are described in **Table 2**. We describe our rationale for selecting these variables and associated hypotheses in this section.

Demographic variables. We used standard demographic variables including age, gender, and race/ethnicity. We expected that potentially avoidable hospitalizations would differ based on age and sex. For example, elderly men enrolled in HCBS waivers would be more likely to have a caregiving spouse than elderly women (although this information is not available in the data), and this higher level of informal support may protect against potentially avoidable hospitalizations. Race/ethnicity could have differential effects depending on the extent to which they were markers of ill health, more severe or longer impoverishment, differential treatment by health care providers, or differing cultural norms and living arrangements.

Health status variables. Our key measure of health status and medical complexity was a count of chronic conditions (0–6) including congestive heart disease, chronic obstructive pulmonary disease, diabetes, Alzheimer’s disease and related dementias, stroke/TIA, and ischemic heart disease. Individuals were identified as having a chronic condition if they met the CCW criteria for the condition using Medicare claims. To avoid counting diagnoses whose first occurrence might have been associated with a hospitalization in 2005, we used the “Ever” variables for these conditions in the CCW data. These refer to the first date a beneficiary met the clinical criteria for a CCW flag as early as 1999. An individual was counted as having a chronic condition if the date in the “Ever” variable is prior to January 1, 2005. The data might understate the prevalence of chronic conditions in states with substantial Medicare managed care enrollment if dually eligible beneficiaries in fee for service in 2005 (and hence in our sample) spent time in Medicare managed care in previous years because they would have fewer Medicare claims that could trigger a chronic condition flag.

Table 2
Independent variable construction

Variable	Source	Description, restrictions	Code level
Individual characteristics			
<i>Age</i>			
0–64	CCW denominator, 2005	Age as of January 1, 2005	Individual
65–74 (1)	CCW denominator, 2005	Age as of January 1, 2005	Individual
75–84	CCW denominator, 2005	Age as of January 1, 2005	Individual
85+	CCW denominator, 2005	Age as of January 1, 2005	Individual
<i>Sex</i>			
Male	CCW denominator, 2005	NA	Individual
Female (1)	CCW denominator, 2005	NA	Individual
<i>Race/ethnicity</i>			
White (1)	CCW denominator, 2005	NA	Individual
Black	CCW denominator, 2005	NA	Individual
Hispanic	CCW denominator, 2005	NA	Individual
Other	CCW denominator, 2005	NA	Individual
Number of chronic conditions (zero to six)	CCW BASF, 2005	Chronic conditions are Alzheimer's/ senile dementia, COPD, heart failure, diabetes, stroke/TIA, and ischemic heart disease. A condition is present if the Ever date (date the beneficiary first met the clinical criteria for the condition) is prior to January 1, 2005.	Individual
<i>Eligibility</i>			
Original reason for Medicare entitlement not aged	CCW denominator, 2005	NA	Individual
Eligible for Medicaid as medically needy	MAX PS, 2005	NA	Individual
Facility characteristics			
Bed hold	(2)	Set BEDHOLD = 1 if Coverage Limitations lists “hosp leave days” (not therapeutic) or “any type” of leave day as being covered = 0 otherwise.	State
Case-mix reimbursement	(2)	Set CASEMIX = 1 if any of the following words are used in Reimbursement Methodology: casemix, “resident class,” acuity, “level of care,” or “heavy care” = 0 otherwise.	State

(continued)

Table 2 (continued)
Independent variable construction

Variable	Source	Description, restrictions	Code level
Facility characteristics (continued)			
Per diem reimbursement	Estimated from MAX LT claims, 2005, for each individual's "stretch" of contiguous days in a NF	Ratio of per diem reimbursement during an individual's NF spell to average per diem for all NF spells nationally. Per diem reimbursement during an individual's NF spell calculated as sum of Medicaid payment amount on MAX LT claims that overlap with NF stay divided by sum of days on the claims. Dropped observations with per diem in the bottom (<\$23) and top (>\$280) 1% of observations. Average per diem for all NF spells nationally is the unweighted average of the per diem calculated for individual NF spells.	Each individual's "stretch" of contiguous days in a NF
Wage index	(3)	NA	CBSA, crosswalked to county
Urban	(3)	NA	CBSA, crosswalked to county
Total beds	2005 OSCAR nursing facility subset provided by CMS	(4)	Facility
Occupancy rate >90%	2005 OSCAR nursing facility subset provided by CMS	(4)	Facility
<i>Ownership</i>			
For profit (1)	2005 OSCAR nursing facility subset provided by CMS	(4)	Facility
Nonprofit	2005 OSCAR nursing facility subset provided by CMS	(4)	Facility
Government	2005 OSCAR nursing facility subset provided by CMS	(4)	Facility
Chain	2005 OSCAR nursing facility subset provided by CMS	(4)	Facility
Hours of RN care per resident day	2005 OSCAR nursing facility subset provided by CMS	(4,5)	Facility
Hours of aide care per resident day	2005 OSCAR nursing facility subset provided by CMS	(4,5)	Facility
<i>Beds by payer</i>			
Medicare >20%	2005 OSCAR nursing facility subset provided by CMS	(4)	Facility
Medicaid >80%	2005 OSCAR nursing facility subset provided by CMS	(4)	Facility

(continued)

Table 2 (continued)
Independent variable construction

Variable	Source	Description, restrictions	Code level
Facility characteristics (continued) <i>Beds by payer (continued)</i> Other >25%	2005 OSCAR nursing facility subset provided by CMS	(4)	Facility
HCBS:LTC spending ratio as a continuous variable	Previous RTI study (6)	Medicaid expenditures on HCBS waivers, home health, personal care and hospice as a proportion of total Medicaid expenditures on community and facility long term	State and age
State is in top 20% of HCBS: Total LTC spending	Previous RTI study (6)	Set 20% LTC Ratio Cut Point = 1 if LTC ratio for age group is in the top 20% of states (.75 for under age 65; .28 for age 65 and over)	State and age
Personal care option	(7)	NA	State
Demand and supply variables TotPop75Plus	ARF, 2007 release of 2005 data	Population 75+ as percent of total population	County
NFBeds75Plus	ARF, 2007 release of 2005 data	NF beds per 1,000 population 75+	County
SNFBeds75Plus	ARF, 2007 release of 2005 data	SNF beds per 1,000 population 75+	County
HospBeds75Plus	ARF, 2007 release of 2005 data	Hospital beds per 1,000 population 75+	County
HospBedsAll (for 0–64 models)	ARF, 2007 release of 2005 data	Hospital beds per 1,000 population, all ages (for 0-64 models)	County

NA = Category not applicable.

ARF = Area Resource File; BASF = Beneficiary Annual Summary File; CBSA = Core Based Statistical Area; CCW = Chronic Condition Data Warehouse; COPD = chronic obstructive pulmonary disease; HCBS = home and community-based services; LT = long term care file; LTC = long-term care; MAX = Medicaid Analytic eXtract; NF = nursing facility; PS = person summary file; RN = registered nurse; SNF = skilled nursing facility, OSCAR = Online Survey and Certification Reporting data; TIA = transient ischemic attack.

NOTES:

(1) Omitted category in the proportional hazards regression model.

(2) Bed Hold and Case mix reimbursement (0, 1). Source is: http://medicaidbenefits.kff.org/print_sv.jsp?so=0&cat=2&nt=off&yr=3&tg=off&sv=24. The source is dated October 2006.

(3) Wage Index and Urban/Rural indicators. Sources are: http://www.cms.gov/SNFPPS/04_WageIndex.asp#TopOfPage and <http://www.cms.gov/AcuteInpatientPPS/FFD/ItemDetail.asp?ItemID=CMS1198538>.

(4) 6.7% of observations were deleted due to missing or questionable OSCAR data.

(5) An additional 1.6% of observations were deleted due to missing or questionable RN or aide care data.

(6) Ratio of Medicaid expenditures on HCBS waivers, home health, personal care, and hospice as a proportion of total LTC spending on community and facility LTC. Calculated separately for beneficiaries under age 65 and over age 65. Includes ICF-MR expenditures for the under 65 age group. These data are from 2002 (Walsh, Greene, and Kaganova, 2006).

(7) Personal care option. Source is:

<http://medicaidbenefits.kff.org/service.jsp?yr=3&nt=off&so=0&gr=off&cat=1&sv=28&x=15&y=8>.

We hypothesized that increasing medical complexity increases the risk of developing a condition associated with potentially avoidable hospitalizations and for some beneficiaries decreases the likelihood that such a condition could be safely managed in a post-acute or long-term care setting. Those who are more medically complex include individuals at high risk of complications or exacerbations who may benefit from or require a hospitalization, and those whose repeated exacerbations and complications may be an indicator of approaching mortality. For this latter group, palliative care may be more appropriate than hospitalization. In addition, as described below, we considered disability as the original reason for Medicare (prior to turning 65) and qualifying for Medicaid eligibility based on being medically needy as additional markers of poor health.

Medicare and Medicaid eligibility variables. We included an indicator for beneficiaries whose original reason for Medicare entitlement was not age. By definition, this included dually eligible beneficiaries age 0–64, and those age 65 and over who originally qualified for Medicare based on disability prior to turning 65. We included this variable because those who qualified for Medicare based on disability were likely to have additional or different needs than dually eligible beneficiaries in nursing facilities, skilled nursing facilities and HCBS waiver programs who first became eligible for Medicare based on age. We also included an indicator for individuals who qualified for Medicaid based on being medically needy. These individuals had extensive health care costs that qualified them for Medicaid eligibility, in those states that have a medically needy program. We hypothesize that they may be at increased risk of developing conditions associated with potentially avoidable hospitalizations.

Facility characteristics. Some facility characteristics were included in models for both Medicaid-covered nursing facility stays and Medicare-covered skilled nursing facility stays. These include profit status (for-profit, nonprofit, or government owned), whether the facility was part of a chain or was an independent facility, and facility size (total number of beds). We hypothesized that residents of for-profit facilities will be more likely to experience potentially avoidable hospitalizations compared to those in nonprofit or government facilities. For-profit facilities may maintain profit margins through cost-cutting measures that might increase the risk of developing a condition associated with potentially avoidable hospitalizations or by sending sicker residents to the hospital rather than providing care for them in the facility. The expected effect of facility size or being part of a chain is uncertain. Larger facilities and chains might provide less personalized care, increasing the risk of having a potentially avoidable hospitalization. Alternatively, these facilities might have the resources to invest in quality monitoring and improvement activities or higher levels of medical monitoring that would reduce the chance of developing a condition associated with potentially avoidable hospitalizations or have an increased ability to address clinical problems when they arise.

We also included indicators for the percentage of payments received from Medicare, Medicaid, and other sources as an indicator of the relative importance of different payers' policies on facility behavior. These variables were used in previous studies. We also included two staffing measures: the number of hours per resident per day of registered nursing care and of certified nursing assistant care. We hypothesized that higher staffing levels would be associated with decreased risk of potentially avoidable hospitalizations. However, there are several reasons why this may not be shown by this analysis. First, the OSCAR data are known to be inaccurate and included facilities with no registered nurse (RN) hours (which are not consistent with

regulation) and some facilities with RN hours that were implausibly high. As a result, we dropped facilities at these extremes. Second, because of staffing regulations, there may not be enough variability to see any effect due to differences in staffing. In the future, when CMS has payroll-generated staffing measures, such analyses will be more accurate and enable inclusion of additional staffing measures such as turnover.

For the Medicaid nursing facility stays, we also included several variables that reflect state policies pertaining to nursing facility care. If a state reimburses facilities to hold a bed for a resident while hospitalized, the facility has an increased incentive to send residents to the hospital because it will be paid without having to provide care and eliminates the concern about whether a bed will be available for the patient's return. In states that vary nursing facility reimbursement under Medicaid according to case-mix, higher payments associated with sicker patients may reduce incentives to send residents to the hospital. Finally, the average Medicaid per diem rate within a facility is another indicator of the resources available to the facility to provide ongoing monitoring and early intervention in health status changes, and so increasing per diem rates would be expected to result in fewer potentially avoidable hospitalizations. Per diem rates were calculated from Medicaid claims associated with a nursing facility stay. Like nursing hours per resident day, some facilities had very high or very low calculated per diem rates that appeared to be invalid. Observations with per diems in the top and bottom 1% (greater than \$280 or less than \$23, respectively) were dropped from the analyses. Remaining observations clustered around \$110/day, consistent with average Medicaid rates identified in other studies (e.g., Intrator and Mor reported \$103.50 as the average Medicaid rate in 2000). The local wage index used in the Medicare skilled nursing facility prospective payment system (PPS) was included to control for the effect of wages on the per diem rates.

Medicaid policies affecting HCBS waiver enrollees. We included two measures intended to capture the relative generosity of state waiver services. We utilize the HCBS-to-total LTC expenditure ratio (HCBS:Total LTC spending), which identifies the extent to which a state is investing in HCBS services relative to institutional care (i.e., having a more “balanced” LTC system) and whether the state Medicaid plan included personal care. We first created the HCBS:LTC variable in a previous CMS study, evaluating the impact of state policies on impairment levels at the time of nursing facility admission and on the likelihood of returning to the community after a nursing facility stay (Walsh et al., 2006). In that study, we found that even controlling for time trends, health status and other demographic characteristics, facility characteristics and state supply variables, the Medicaid HCBS:LTC expenditure ratio had a significant and positive effect on the ADL scores on admission for people over age 65. In other words, the higher the percentage of long-term care expenditures for home and community-based services, the higher the ADL levels in nursing facilities. We also found as the proportion of spending for community long-term care within a state increased, the odds of nursing facility residents being discharged to the community for both those under age 65 and those age 65 and over.

In the current analysis, we hypothesized that as HCBS spending increases, the likelihood of having a potentially avoidable hospitalization would decrease. Similarly, HCBS enrollees in states offering personal care services might also have had fewer potentially avoidable

hospitalizations.¹ Even though HCBS waiver services and personal care are not inherently medical, we base this hypothesis on the potential protective effects of increased monitoring so that health problems might be identified early, assistance with activities of living which would decrease the risk of problems such as falls and pressure ulcers, and assistance with instrumental activities of daily living which could prevent dehydration, provide adequate nutrition, ensure that medications are taken as prescribed and provide transportation to medical appointments. As the personal care option is more often used by beneficiaries under 65, and the HCBS waiver packages often vary for those under 65 vs. age 65 and over, we stratified the sample into these two separate age groups for some analyses. Alternatively, if higher HCBS spending or the presence of personal care services allowed more impaired, and conceivably sicker, beneficiaries to remain in the community, we would expect to see potentially avoidable hospitalization rates to increase with increased HCBS spending.

Supply and demand variables. We also included various standard measures of supply and demand for medical services. In the models for those age 65 and over, we included the percentage of the population age 75 and over as a measure of demand for medical care. Nursing facility beds and skilled nursing facility beds per 1,000 age 75 and over are measures of the availability of facilities in the area. Similarly, hospital beds per 1,000 population age 75 and over (for analyses including those 65 and over) or per 1,000 general population (for analyses restricted to those under age 65) controlled for the availability of hospital resources which could facilitate hospitalization.

¹ There is substantial state variation in the personal care benefit, for example, in the maximum number of hours that can be authorized and whether the benefit is available to those who qualify for Medicaid under the medically needy provision. We flagged a beneficiary as living in a state with personal care regardless of the specific characteristics of the state's personal care benefit.

SECTION 3 DEFINING POTENTIALLY AVOIDABLE HOSPITALIZATIONS

We developed an updated list of conditions associated with potentially avoidable hospitalizations and their respective ICD–9 codes by reviewing the literature, convening a technical expert panel (TEP), and iteratively reviewing the specific ICD–9 codes to ensure completeness and to eliminate codes that were not appropriate. In this section we provide background information about this topic, and we describe our process and the resulting list of conditions.

3.1 Background

Potentially avoidable hospitalizations have been defined in a number of ways and definitions are continuing to evolve. Although several relatively recent articles examined the hospitalization of nursing facility residents, the sets of conditions related to potentially avoidable hospitalizations used in these articles were in many instances established more than 15 years ago (for example, (Carter 2003; Carter and Porell 2003; Grabowski, O'Malley et al. 2007). In addition, several of these lists of conditions were created for the general population of persons residing in the community, not nursing facility residents or persons on 1915(c) waivers. Although these lists of ambulatory care sensitive hospitalizations for the general population have been used for analyses of nursing facility residents, there is little literature that analyzes the appropriateness of this translation. And while such ambulatory care sensitive conditions may be viewed as more easily transferable to the community-based subpopulation of persons receiving home and community-based services waiver care, this transfer would also likely benefit from some scrutiny. For example, Carter (2003a) wrote that “conditions included in [ambulatory care sensitive hospitalization] measures vary somewhat across studies, particularly in terms of study population of interest (e.g., children younger than 18 years of age versus elders older than 65 years of age).”

Conceptually, two circumstances may give rise to a potentially avoidable hospitalization: conditions that should not occur in the first place (e.g., pressure ulcers) and conditions that could be manageable within the nursing facility or community setting with appropriate care (e.g., respiratory infections).

3.2 Approach

Given the range of condition sets that have been created for various purposes, and the age of several of these lists, we engaged in a focused review of these lists and compiled these materials, indicating areas of overlap and distinctions across the lists. We provided this information to a TEP. Prior to the meeting, Dr. Ouslander, one of the TEP members, reviewed the materials and provided a comprehensive summary rating, and expanded the list to include additional conditions and comments related to relevant conditions for further discussion. The lists provided to the TEP members prior to the meeting are attached as an Appendix A.

Table 3 displays the membership of the TEP and their respective relevant experience. The TEP membership included specialists in geriatric medicine, post-acute and long-term care, studies of potentially avoidable hospitalizations from nursing facilities, studies of ambulatory care sensitive conditions, nursing facility and 1915(c) waiver services and populations. In

addition, several members of the TEP are also involved in the CMS nursing facility quality measure development process. As part of that project, a separate TEP was convened in October 2009, during which definitions of potentially avoidable hospitalization (renamed at the meeting to “conditions amenable to early detection and treatment”), the use of claims data to identify such hospitalizations, and algorithms to distinguish hospitalizations attributable to premature hospital discharge were discussed at length. The TEP members for this study participated in a 2-hour telephone conference followed by additional communications by telephone and e-mail. CMS staff also participated in the TEP call, contributing questions and final comments to the discussion.

Table 3
Technical expert panel on potentially avoidable hospitalizations

Member	Relevant experience
Joseph Ouslander, MD	Geriatrician, conducted previous analyses of potentially avoidable hospitalizations, consultant to RTI project with CMS on nursing facility quality measure development.
Nancy McCall, ScD, RN	Analyses of ambulatory care sensitive conditions
Shulamit Bernard, PhD, GNP	Former director of RTI Health Quality and Outcomes Program and Aging Program, clinical experience in long-term care settings, member of RTI team working on nursing facility quality measures.
Edith G. Walsh, PhD, RN	Co-PI of CMS project developing nursing facility quality measures; clinical and administrative experience in community-based and facility long-term care
Marc Freiman, PhD	Previous studies of the hospitalization of nursing facility residents

PI = principal investigator.

The meeting had the following objectives: (1) discuss the differences among the lists, and determine if there is a panel consensus on how differences would be resolved; (2) review older lists from the perspective of whether there have been changes in treatments or other factors that make some conditions less suitable for this population and our current timeframe in light of current practice; (3) evaluate whether it would make sense to use different lists for the two populations (i.e., nursing facility residents and waiver recipients); (4) consider the feasibility of identifying hospitalizations that should have been prevented versus hospitalizations for conditions that may not have been preventable but could have been treated at a lower level of care; and (5) propose a specific list of conditions to be utilized in this task for CMS approval.

Table 4 displays the conditions selected by the TEP and reviewed and approved by CMS. In addition to listing the conditions, Table 4 indicates the TEP’s views on whether a condition was included because it was preventable or manageable within the nursing facility setting (i.e., either skilled nursing facility or a long-term care facility) or community settings. Although the

preventability and manageability of a condition within each setting depends on factors including disease severity, comorbid conditions and available resources, those conditions marked with a “Y” represent a stronger likelihood that the condition could be prevented or managed outside of an acute care hospital. Question marks (?) indicate the TEP’s concern that the condition could less often be prevented or managed (either in general or in long-term or post-acute care patients, or in one of the study settings). However, the TEP retained those conditions because they could be prevented or managed without hospitalization at least some of the time. Finally, Table 4 distinguishes a subset of conditions less likely to be prevented or managed in the community, even with support services. Those conditions less likely to be preventable or manageable among home and community-based services enrollees are indicated with bold italics.

Table 4
Conditions selected as potentially avoidable hospitalizations by setting

Diagnostic condition	Preventable/ manageable in a nursing facility	Preventable/ manageable in community setting	Comments
Anemia ¹	N/Y	N/Y	Anemia should be identified, followed, and managed in the facility. Many patients have bone marrow failure and require periodic transfusions. This does not require inpatient admission, although it may sometimes be managed as an inpatient in Medicare A patients for financial reasons.
Congestive heart failure (CHF)	Y/Y	Y/Y	Main effort of a home care plan/home health plan would be to monitor for/prevent/treat exacerbations. Most episodes of exacerbations of CHF (not new onset or with hemodynamic instability) can be managed in the facility, and many can be prevented if patients at risk are monitored carefully. There are cases of frequent CHF exacerbation despite good management—this is a very poor prognostic sign, and these patients should be considered for palliative care or hospice, not hospitalized.
Hyper and hypotension- separate conditions	Y/Y	Y/Y	Hypertension is generally overtreated in long-term care patients. Hypertensive episodes are usually related to agitation or discomfort, not a primary cardiovascular condition. Iatrogenic hypotension and postural hypotension are common due to polypharmacy with medications that can affect blood pressure and/or volume depletion related to diuretic use or poor fluid intake, and should be prevented.

(continued)

Table 4 (continued)
Conditions selected as potentially avoidable hospitalizations by setting

Diagnostic condition	Preventable/ manageable in nursing facility	Preventable/ manageable in community setting	Comments
Hyper and hypoglycemia diabetes with ketoacidosis or hyperosmolar coma	Y/Y	Y/Y	Diabetes is often overtreated in long-term care patients. Patients should be monitored at appropriate frequencies, and hypoglycemic medications adjusted to keep blood sugar in a broad range in most patients. Over-aggressive treatment results in frequent and unnecessary episodes of hypoglycemia.
Dehydration acute renal failure hypokalemia hyponatremia	Y/Y	Y/Y	Acute renal failure is often the code used for patients who are dehydrated. Patients at risk should be monitored and treated for these conditions before they are severe enough to require acute care transfer.
Constipation/fecal impaction/ obstipation	Y/Y	Y/Y	Bowel habits should be routinely monitored and appropriate dietary, nonpharmacologic, and pharmacologic interventions implemented. Patients should not become so severely constipated they require acute care transfer.
Diarrhea ¹	N/Y	N/?	Acute, severe diarrhea due to gastroenteritis or food poisoning may require hospitalization, but can often be managed in the skilled nursing setting. (See next entry under <i>C. Difficile</i> .)
<i>C. Difficile</i> ¹	??	??	The most common cause of diarrhea in this population is now <i>C. Difficile</i> . This “super-infection” commonly results from the inappropriate and unnecessary use of antibiotics, and may be preventable in some cases.
Gastroenteritis with nausea and vomiting ¹	N/Y	N/?	Acute, severe gastroenteritis or food poisoning may require hospitalization for hydration, but can often be managed in the skilled nursing setting.
Cellulitis ¹	?/Y	?/Y	Most cases of cellulitis can be managed in the facility, and often cases could be managed in the community.

(continued)

Table 4 (continued)
Conditions selected as potentially avoidable hospitalizations by setting
(bold italics indicate conditions less amenable to management in community settings)

Diagnostic condition	Preventable/ manageable in a nursing facility	Preventable/ manageable in community setting	Comments
Skin ulcers including pressure ulcers	Y/Y	Y/Y	Pressure ulcers can often be prevented, and existing ulcers should be treated and monitored so that they do not become severe enough to require hospitalization.
Lower respiratory: Pneumonia Bronchitis ¹	?/Y	?/Y	Early identification and treatment have been shown to prevent many hospitalizations. Patients who meet specific severity of illness criteria may require hospitalization.
Urinary tract infection (UTI)	Y/Y	?/Y	UTI is probably the most overdiagnosed and inappropriately treated acute condition in the long-term care population. Most cases of true UTI can be managed without hospitalization.
Falls and trauma ¹	Y/?	?/?	Most of these conditions relate to injurious falls. Many but not all falls can be prevented. Patients who meet specific criteria may require evaluation in an emergency room, and some require admission. In the home setting, some individuals may elect to risk falls and injury given a lack of 24-hour supervision rather than accept nursing facility placement.
Altered mental status/acute confusion/delirium ¹	Y/?	?/?	Initial assessment can be done in the facility. Depending on underlying condition, often can be managed without hospitalization. However, in the home setting hospitalization may be required.
Psychosis, severe agitation ¹ Organic brain syndrome ¹	N/Y	N/N	Patients with dementia and psychotic disorders should be managed with nonpharmacologic and pharmacologic treatment and followed carefully. Geropsychiatrists, psychologists, and trained mental health nurses can help with follow-up. Appropriate medical evaluation should be done for acute changes. Hospitalization is only necessary if the patient is a danger to herself or others.

(continued)

Table 4 (continued)
Conditions selected as potentially avoidable hospitalizations by setting
(bold italics indicate conditions less amenable to management in community settings)

Diagnostic condition	Preventable/ manageable in a nursing facility	Preventable/ manageable in community setting	Comments
Chronic obstructive pulmonary disease (COPD) Asthma Chronic bronchitis	Y/Y	Y/Y	These diagnoses are often used interchangeably in long-term care patients. Many episodes of exacerbations of COPD (not with severe bronchospasm, hypoxia, or hemodynamic instability) can be managed in the facility, and many can be prevented if patients at risk are monitored carefully. Frequent COPD exacerbation despite good management is a very poor prognostic sign, and these patients should be considered for palliative care or hospice, not hospitalization.
Weight loss, nutritional deficiencies, adult failure to thrive	Y/?	Y/?	Weight should be monitored regularly and significant weight loss evaluated and managed before it becomes severe enough to require hospitalization.
Seizures	Y/Y	Y/Y	Close follow-up and careful management of anticonvulsant medications can often prevent recurrent seizures. Not all patients who have had a seizure need to be transferred if they have a known cause of seizures.

¹ Conditions less amenable to management in community settings.

Table 5 reports several conditions used by other researchers that were discarded by the TEP for the purpose of this study and the reasons for those decisions.

After the meeting, TEP members provided ICD–9 codes used in the AHRQ-sponsored Prevention Quality Indicators (PQIs), which are a set of measures used to identify quality of care for ambulatory care-sensitive conditions (http://www.qualityindicators.ahrq.gov/pqi_overview.htm), and relevant ICD–9 codes used to identify Hospital Acquired Conditions. We consulted the 2005 ICD–9 codebook to identify additional codes associated with each condition, ran frequencies by codes, and distributed those results to TEP members for further comment and review. The final list of ICD–9 codes by condition are included in Appendix B. The TEP also recommended collapsing the condition list into clinically meaningful subgroups and all results are reported by subgroup. For example, diagnoses associated with poor glycemic control are reported together, as are skin ulcers and cellulitis, diagnoses associated with dehydration, chronic obstructive pulmonary disease and asthma, diarrhea (including *C. Difficile*) and gastroenteritis.

Table 5
Conditions dropped from further consideration

Diagnostic condition	Comments
Chest pain	Although most chest pain/angina could be monitored and treated without hospitalization, it is hard for a facility to avoid sending someone to the ER for evaluation.
Fever	A symptom, not a diagnosis; guidelines exist for evaluation and management of fever in long-term care. Unless otherwise unstable, most patients with fever should be evaluated to determine the underlying cause before transfer to a hospital.
Sepsis	A nonspecific diagnosis—individuals with sepsis must be treated in hospital. It is considered by some to be an avoidable hospitalization because of potential underlying causes such as an untreated urinary tract infection.
Over/under anticoagulation therapy	Both this TEP and the TEP for the Nursing Home Quality Measure development project consider this an important issue resulting in unnecessary hospitalizations as many nursing facility residents are on anticoagulation therapy that should be closely monitored. However, members of both TEPs questioned whether it could be identified accurately. Only E codes can be used to evaluate whether problems with coagulation relate to medication use versus underlying pathology. Because E codes are not consistently used, we dropped this category.

TEP = Technical Expert Panel.

SECTION 4
CHARACTERISTICS OF THE STUDY POPULATION

The study population includes almost 1.6 million dually eligible beneficiaries in a nursing facility, skilled nursing facility or HCBS aged or disabled waiver program during 2005 (Table 6). Nationwide, nearly 1.1 million (69% of the total) had some period of residence in a Medicaid-covered nursing facility during the year, 0.6 million (36%) had some period of residence in a Medicare-covered skilled nursing facility, and 0.4 million (24%) were enrolled in HCBS waiver programs. The sum of study population members by setting exceeds the total number of dually eligible beneficiaries in the study population because 27% were in more than one of these settings during the course of the year, most of whom (24% of the study population) had a period of residence in both a Medicaid-covered nursing facility and a Medicare-covered skilled nursing facility. Beneficiaries were less likely to have both periods of HCBS waiver coverage and residence in a Medicaid-covered nursing facility or Medicare-covered skilled nursing facility—approximately 5% of the population. Approximately 2% of the population had some period in all three settings.

Table 6
Number of dually eligible beneficiaries by setting and state, 2005

Location	All settings	Medicaid-covered nursing facility ¹	Medicare- covered skilled nursing facility ¹	HCBS waivers ¹
U.S.	1,571,920	1,087,037	560,908	373,637
Alabama	27,221	19,899	10,135	5,509
Alaska	2,261	604	254	1,624
Arkansas	24,556	15,744	7,380	8,196
California	94,856	66,083	45,907	9,493
Colorado	18,965	9,392	4,311	10,223
Connecticut	33,056	21,439	12,915	10,134
Delaware	4,485	3,223	1,368	1,184
District of Columbia	3,520	2,473	1,227	722
Florida	83,463	61,614	36,534	11,961
Georgia	46,442	32,056	15,139	12,028
Hawaii	4,273	2,574	980	1,435
Idaho	9,761	3,851	1,942	6,194
Illinois	94,685	55,972	25,791	38,112
Indiana	39,721	34,188	14,407	2,738
Iowa	27,458	17,753	6,352	10,148
Kansas	25,672	14,622	6,126	11,601
Kentucky	30,148	20,016	10,834	8,757
Louisiana	30,123	24,733	13,493	3,088
Maryland	21,081	16,087	7,936	3,236
Massachusetts	43,314	32,122	18,674	5,549
Michigan	51,328	39,509	17,862	8,099

(continued)

Table 6 (continued)
Number of dually eligible beneficiaries by setting and state, 2005

Location	All settings	Medicaid-covered nursing facility ¹	Medicare-covered skilled nursing facility ¹	HCBS waivers ¹
Minnesota	23,407	10,514	5,262	12,878
Mississippi	29,215	16,504	10,517	9,862
Missouri	52,844	31,332	15,508	20,343
Montana	7,386	4,554	1,672	2,681
Nebraska	13,275	9,373	4,284	3,515
Nevada	5,146	3,231	1,565	1,791
New Hampshire	8,650	6,244	2,234	2,249
New Jersey	36,387	31,274	17,078	1,178
New Mexico	7,757	5,219	2,036	2,172
New York	107,652	89,014	49,464	N/A
North Carolina	43,041	25,497	17,650	11,716
North Dakota	5,212	4,444	1,730	361
Ohio	94,904	64,307	27,987	30,916
Oklahoma	31,091	17,020	7,245	14,073
Oregon	14,292	3,993	2,173	10,759
Pennsylvania	70,782	52,905	23,655	16,503
Rhode Island	6,348	4,190	2,206	1,973
South Carolina	28,331	15,180	9,436	11,192
South Dakota	6,384	5,196	1,817	980
Tennessee	38,424	30,350	19,134	451
Texas	114,752	79,440	39,699	32,445
Utah	5,664	4,304	1,814	739
Vermont	3,983	2,547	1,000	1,158
Virginia	35,023	22,094	13,073	9,985
Washington	16,955	13,607	7,307	N/A
West Virginia	12,211	8,844	4,430	2,363
Wisconsin	33,053	29,825	10,580	N/A
Wyoming	3,362	2,081	785	1,294

HCBS = home and community-based services.

¹ Categories are not mutually exclusive, so persons may be counted in more than one category.

The size of the study population in individual states ranged from approximately 2,300 in Alaska to 115,000 in Texas. The distribution of the study population among settings varied considerably across states. In five states, more than 50% of dually eligible beneficiaries in the study population were enrolled in home and community-based waivers (Alaska, Colorado, Idaho, Minnesota, and Oregon), while in six states less than 10% were enrolled in these waivers (California, Indiana, Louisiana, New Jersey, North Dakota, and Tennessee). The five states with

high enrollment in HCBS waivers had correspondingly low percentages of dually eligible beneficiaries with periods of residence in a Medicaid-covered nursing facility (less than 50% in all five states). Use of Medicare-covered skilled nursing facility services was also low—less than 20% of the study population—in the three states with the highest enrollment in home and community-based waivers (Alaska, Idaho, and Oregon). This may reflect that it is more feasible to discharge patients to home with the support of home health services in states with strong home and community-based services programs.

Nationally, more than one-third of dually eligible beneficiaries in these settings were hospitalized for any reason and one-fifth had a potentially avoidable hospitalization in 2005 (**Table 7**).² Dually eligible beneficiaries in home and community-based waivers were the most likely to have a hospitalization for any reason (37%) and to have a potentially avoidable hospitalization (20%) originating from a period of waiver enrollment.³ Among dually eligible beneficiaries who resided in Medicaid-covered nursing facilities, 29% had a hospitalization for any reason and 17% had a potentially avoidable hospitalization originating from a nursing facility stay. Individuals who resided in a Medicare-covered skilled nursing facility were the least likely to have a hospitalization for any reason (18%) and to have a potentially avoidable hospitalization (10%) that originated from a skilled nursing facility stay. The differences among the three settings in the percentage of beneficiaries hospitalized in part reflects differences in the proportion of time beneficiaries spend in the setting and, hence, are at risk of being hospitalized. For example, Medicare-covered skilled nursing facilities are by definition relatively brief. The hospitalization rates reported in the following section adjust for these differences in exposure across settings.

The percentage of dually eligible beneficiaries in these settings who were hospitalized during 2005 varied considerably by state (Table 7). In Louisiana, 47% were hospitalized for any reason and 28% had a potentially avoidable hospitalization. In Utah and Vermont, in contrast, only 19% were hospitalized for any reason and 10% had a potentially avoidable hospitalization. State rankings differed somewhat across the settings, although Louisiana consistently had among the highest percentages of beneficiaries with a hospitalization and a potentially avoidable hospitalization. For individuals in HCBS waiver programs, Kentucky had the highest percentages hospitalized. Vermont had among the lowest percentages of beneficiaries with a hospitalization and with a potentially avoidable hospitalization in all three settings. Additional states with low percentages hospitalized from Medicaid-covered nursing facilities included Alaska, Hawaii, Oregon, and Utah. Alaska, Hawaii, and Montana had low percentages of beneficiaries hospitalized from Medicare-covered skilled nursing facilities, while Minnesota and Montana had low percentages of beneficiaries hospitalized from HCBS waiver programs.

² As the groups are not mutually exclusive, i.e., beneficiaries may appear in more than one setting, and the denominators across the groups vary, the percentage of beneficiaries with a potentially avoidable hospitalization in each setting cannot be added up to reach the total from all settings.

³ This percentage includes individuals in home and community-based waivers with a potentially avoidable hospitalization based on the full set of diagnosis codes, not the set limited to diagnoses that are preventable or manageable in community settings.

Table 7
Percentage of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waiver stays by hospitalization status and state, 2005 ^a

Location	<u>All settings</u> % with hospitalization	<u>All settings</u> % with PAH	<u>Medicaid-covered nursing facility</u> % with hospitalization	<u>Medicaid-covered nursing facility</u> % with PAH	<u>Medicare-covered skilled nursing facility</u> % with hospitalization	<u>Medicare-covered skilled nursing facility</u> % with PAH	<u>HCBS waivers</u> % with hospitalization	<u>HCBS waivers</u> % with PAH
U.S.	35.3	17.8	29.0	16.5	18.4	9.6	36.8	12.5
Alabama	37.4	18.9	32.0	17.4	18.9	10.2	34.5	11.7
Alaska	29.3	9.8	15.2	7.6	8.3	2.4	33.9	10.4
Arkansas	41.9	21.4	36.0	21.8	18.3	9.5	39.8	13.8
California	32.0	16.5	27.4	15.6	19.6	9.2	34.1	11.4
Colorado	31.5	12.3	19.8	11.2	13.3	5.9	34.7	10.0
Connecticut	32.2	15.0	19.6	10.5	22.6	12.1	34.8	11.2
Delaware	37.0	18.7	30.1	16.8	17.8	11.3	37.9	11.8
District of Columbia	41.3	21.8	36.9	21.3	22.2	10.9	37.4	14.7
Florida	35.4	18.2	29.7	16.5	19.5	9.9	34.7	12.2
Georgia	37.3	19.5	31.5	18.7	17.8	9.4	37.6	13.5
Hawaii	23.4	9.2	15.0	7.9	10.4	4.5	35.6	10.0
Idaho	28.6	10.2	17.4	9.9	12.9	6.0	30.2	8.0
Illinois	40.2	19.2	34.5	19.5	19.3	10.4	36.1	12.0
Indiana	32.6	17.8	27.7	15.9	16.6	8.7	39.6	13.0
Iowa	32.1	14.8	25.8	14.9	11.2	5.7	34.6	10.6
Kansas	37.8	17.3	31.0	18.1	12.9	7.1	37.7	11.8
Kentucky	42.3	22.8	35.1	21.1	17.9	10.4	43.2	17.3
Louisiana	47.4	27.3	40.3	24.2	22.1	13.0	42.8	15.7
Maryland	35.9	18.1	30.4	16.4	18.1	9.1	38.3	14.2

(continued)

Table 7 (continued)
Percentage of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waiver stays by hospitalization status and state, 2005 ^a

Location	<u>All settings</u> % with hospitalization	<u>All settings</u> % with PAH	Medicaid- covered <u>nursing</u> <u>facility</u> % with hospitalization	Medicaid- covered <u>nursing</u> <u>facility</u> % with PAH	Medicare- covered <u>skilled</u> <u>nursing facility</u> % with hospitalization	Medicare- covered <u>skilled</u> <u>nursing facility</u> % with PAH	HCBS <u>wavers</u> % with hospitalization	HCBS <u>wavers</u> % with PAH
Massachusetts	29.8	15.9	24.3	13.9	16.9	9.1	35.6	12.7
Michigan	32.2	16.1	26.3	14.3	17.7	8.9	36.8	12.4
Minnesota	24.8	8.8	15.6	7.8	14.9	6.8	26.3	6.8
Mississippi	42.3	21.8	38.7	22.5	21.2	11.6	38.0	14.4
Missouri	38.3	18.5	31.7	18.4	17.2	9.1	37.4	12.8
Montana	23.9	11.2	19.9	11.9	10.7	4.6	25.4	7.7
Nebraska	30.9	15.3	25.0	14.6	15.1	7.9	31.5	9.1
Nevada	35.8	15.1	25.9	13.0	17.6	8.4	40.7	12.6
New Hampshire	25.6	11.6	18.4	9.7	11.5	5.9	35.7	11.9
New Jersey	41.0	23.8	35.3	21.1	20.4	11.2	36.0	10.4
New Mexico	28.6	14.0	22.4	13.1	16.3	8.7	32.9	10.4
New York	34.0	17.9	28.2	14.9	23.3	12.2	60.0	40.0
North Carolina	34.2	16.6	27.9	15.4	17.6	8.9	38.2	14.1
North Dakota	24.8	14.2	22.0	13.4	12.0	6.6	29.9	8.6
Ohio	36.4	17.6	27.5	15.1	16.1	8.5	39.9	14.9
Oklahoma	39.9	18.5	34.0	19.7	16.9	9.3	38.3	12.3
Oregon	28.0	9.1	15.8	8.6	13.2	6.3	28.6	7.6
Pennsylvania	35.8	18.2	27.8	15.7	16.4	8.9	40.7	14.8

(continued)

Table 7 (continued)
Percentage of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waiver stays by hospitalization status and state, 2005 ^a

Location	<u>All settings</u> % with hospitalization	<u>All settings</u> % with PAH	Medicaid- covered <u>nursing facility</u> % with hospitalization	Medicaid- covered <u>nursing facility</u> % with PAH	Medicare- covered <u>skilled nursing facility</u> % with hospitalization	Medicare- covered <u>skilled nursing facility</u> % with PAH	<u>HCBS waivers</u> % with hospitalization	<u>HCBS waivers</u> % with PAH
Rhode Island	33.9	17.1	25.6	15.1	18.0	9.7	34.7	12.2
South Carolina	38.0	18.0	29.0	16.6	17.8	9.5	41.7	14.9
South Dakota	26.9	14.0	23.5	14.0	12.0	5.7	28.4	6.4
Tennessee	35.5	20.7	32.8	19.8	18.4	9.8	37.3	14.6
Texas	39.7	21.2	32.4	19.9	18.3	10.2	38.8	13.8
Utah	19.2	9.0	14.4	7.9	13.6	5.7	30.3	8.7
Vermont	18.6	8.7	15.0	8.8	10.3	5.2	22.0	6.1
Virginia	36.9	17.5	28.8	15.4	19.2	9.7	40.7	14.6
Washington	23.2	12.1	20.4	10.9	15.8	7.8	18.8	0.0
West Virginia	36.2	20.0	32.4	19.6	16.5	8.9	35.0	13.3
Wisconsin	23.3	12.4	20.9	11.3	14.1	6.6	12.5	0.0
Wyoming	30.8	14.9	21.4	13.8	11.8	6.1	38.3	12.8

HCBS = home and community-based services; PAH = potentially avoidable hospitalization.

^a As the groups are not mutually exclusive, i.e., beneficiaries may appear in more than one setting, and the denominators across the groups vary, the percentage of beneficiaries with a hospitalization in each setting cannot be added up to reach the total from all settings.

NOTE: N/A indicates Not Applicable and is used where state data were not available.

Demographic characteristics of the population of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and HCBS waiver programs are shown in **Table 8**. Over 70% of dually eligible beneficiaries in these settings are female, more than two-thirds are age 75 and older, and more than three-quarters are white. Slightly over one-quarter of dually eligible beneficiaries in these settings died during the year. Although there is some variation among states in the distribution of beneficiaries by sex, in all states almost two-thirds or more are female. While individuals under age 65 are 15% of dually eligible beneficiaries in nursing facility, skilled nursing facility, and home and community-based settings nationally, in four states (Idaho, Illinois, Minnesota, and Montana) this age group comprises more than 25% of the population. The racial composition of the population varies considerably among states from New Hampshire and Vermont, where 99% is white, to the District of Columbia, where whites comprise 9% of the population. The percentage of beneficiaries that died generally ranges from 20% to 30%, except in Minnesota where only 16% died during the year.

The demographic characteristics of dually eligible beneficiaries in Medicaid-covered nursing facilities, Medicare-covered skilled nursing facilities, and HCBS waiver programs are shown in **Tables 9, 10, and 11**, respectively. The population in all three settings is predominately female, although nationally and in all states except Alaska dually eligible beneficiaries in Medicare-covered skilled nursing facilities are somewhat more likely to be male. There are marked differences in the age distribution by setting. Nationally, only 11% of dually eligible beneficiaries in Medicaid-covered nursing facilities are under age 65, compared to 14% of those in Medicare-covered skilled nursing facilities and 24% of those in HCBS waiver programs. Conversely, in the United States overall, individuals age 85 and over comprise 40% of dually eligible beneficiaries in Medicaid-covered nursing facilities, 31% of those in Medicare-covered skilled nursing facilities, and 21% of those in HCBS waiver programs. With a small number of exceptions, these patterns are observed in all states. Nationally and in most states, dually eligible beneficiaries in Medicaid-covered nursing facilities are somewhat more likely to be white than those in Medicare-covered skilled nursing facilities and HCBS waivers programs. Dually eligible beneficiaries in HCBS waiver programs are substantially less likely to die during the year (14%) than those in Medicaid-covered nursing facilities (29%) and those in Medicare-covered skilled nursing facilities (32%). This pattern holds in all states.

Table 8
Demographic characteristics of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
U.S.	28.6	71.4	15.0	18.0	32.9	34.1	78.0	16.7	2.5	2.8	25.6
Alabama	23.2	76.8	13.6	17.3	33.0	36.1	69.7	29.7	0.1	0.6	26.8
Alaska	35.8	64.2	24.2	22.0	33.7	20.1	68.2	4.6	1.0	26.3	20.6
Arkansas	26.7	73.3	12.8	16.8	33.4	37.0	78.7	20.1	0.2	1.0	24.9
California	34.3	65.7	15.2	19.6	34.0	31.2	68.2	12.4	7.9	11.5	26.5
Colorado	33.2	66.8	24.4	17.4	29.4	28.8	86.9	4.5	6.2	2.5	19.9
Connecticut	26.6	73.4	10.0	17.0	32.8	40.2	83.8	11.0	3.3	1.9	23.1
Delaware	28.7	71.3	17.3	16.6	31.1	35.0	70.9	26.9	1.0	1.2	25.9
District of Columbia	30.2	69.8	12.5	21.3	35.0	31.2	9.3	88.7	0.7	1.3	23.5
Florida	29.5	70.5	11.0	17.6	34.8	36.6	73.2	18.0	7.2	1.6	29.2
Georgia	27.5	72.5	15.2	18.2	33.4	33.2	65.0	34.0	0.2	0.7	25.7
Hawaii	36.6	63.4	15.8	17.2	33.4	33.5	26.0	1.0	1.3	71.8	24.2
Idaho	33.0	67.0	26.5	17.9	28.2	27.5	94.6	0.5	1.8	3.1	21.0
Illinois	31.7	68.3	26.9	19.0	28.3	25.8	71.0	24.5	1.8	2.7	19.8
Indiana	28.4	71.6	13.9	16.9	34.1	35.1	89.0	10.0	0.2	0.8	28.6
Iowa	28.5	71.5	12.3	19.3	32.4	36.0	96.1	2.5	0.2	1.1	23.3
Kansas	28.5	71.5	21.9	17.8	29.1	31.2	88.0	8.8	1.0	2.2	21.9
Kentucky	28.1	71.9	16.7	20.0	33.6	29.6	90.6	8.8	0.0	0.5	26.4
Louisiana	29.9	70.1	13.5	19.0	34.5	33.0	64.7	34.2	0.3	0.8	27.8
Maryland	29.7	70.3	13.8	17.4	34.3	34.4	61.9	34.8	0.7	2.7	26.6

(continued)

Table 8 (continued)
Demographic characteristics of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
Massachusetts	26.0	74.0	11.9	16.0	32.4	39.7	89.8	5.6	1.5	3.0	25.5
Michigan	27.0	73.0	11.6	15.9	34.2	38.3	82.0	16.2	0.5	1.3	29.1
Minnesota	33.8	66.2	35.2	12.2	25.0	27.5	92.8	3.6	0.4	3.2	16.3
Mississippi	26.4	73.6	14.8	19.8	33.5	31.9	58.2	41.1	0.1	0.6	22.6
Missouri	26.6	73.4	11.9	23.0	34.4	30.6	84.9	14.2	0.2	0.8	23.2
Montana	33.0	67.0	27.8	15.3	26.0	31.0	92.0	0.3	0.4	7.4	22.2
Nebraska	27.0	73.0	14.6	15.0	31.2	39.3	94.3	3.4	0.6	1.8	25.5
Nevada	31.3	68.7	16.1	21.2	33.8	28.9	83.1	8.8	3.2	4.9	28.5
New Hampshire	24.6	75.4	13.3	14.9	31.3	40.5	98.7	0.5	0.1	0.6	25.3
New Jersey	26.0	74.0	11.5	15.0	32.1	41.4	76.6	17.9	3.1	2.4	29.1
New Mexico	32.5	67.5	14.1	16.8	33.7	35.4	73.7	2.4	14.1	9.8	26.3
New York	29.8	70.2	9.8	15.4	33.2	41.7	77.8	15.3	3.3	3.5	27.7
North Carolina	23.0	77.0	14.6	19.0	34.5	31.9	63.1	34.7	0.2	2.0	27.3
North Dakota	30.2	69.8	11.2	11.8	30.1	46.9	95.7	0.2	0.1	4.0	27.4
Ohio	27.5	72.5	16.1	19.9	33.8	30.2	82.3	16.3	0.3	1.0	24.0
Oklahoma	26.9	73.1	19.8	22.0	31.3	26.9	80.4	10.0	0.5	9.1	23.8
Oregon	32.3	67.7	23.6	19.7	30.2	26.5	93.6	2.1	1.0	3.3	23.1
Pennsylvania	24.3	75.7	10.0	15.8	35.1	39.0	85.8	12.1	0.7	1.4	27.4
Rhode Island	23.0	77.0	15.8	15.0	31.1	38.2	90.6	5.5	1.8	2.1	23.6
South Carolina	27.0	73.0	17.4	18.8	33.1	30.7	58.5	40.8	0.1	0.5	24.2
South Dakota	28.3	71.7	9.2	13.5	30.0	47.3	93.1	0.3	0.1	6.6	26.8

(continued)

Table 8 (continued)
Demographic characteristics of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
Tennessee	28.3	71.7	13.1	19.4	34.8	32.6	81.7	17.6	0.1	0.7	29.3
Texas	29.6	70.4	14.2	19.2	34.1	32.5	73.4	14.7	10.1	1.7	24.8
Utah	31.8	68.2	19.0	20.4	32.2	28.4	93.2	1.0	2.1	3.7	29.4
Vermont	29.9	70.1	11.2	14.8	34.7	39.3	98.8	0.3	0.2	0.7	26.9
Virginia	27.2	72.8	15.6	19.3	33.5	31.6	62.4	35.1	0.5	2.0	26.8
Washington	30.9	69.1	16.4	16.8	32.0	34.9	89.4	3.5	1.0	6.1	31.4
West Virginia	27.9	72.1	14.4	19.8	34.2	31.5	95.3	3.9	0.0	0.8	25.4
Wisconsin	29.4	70.6	9.0	12.2	32.5	46.4	95.8	2.6	0.3	1.4	30.2
Wyoming	30.3	69.7	20.3	18.8	31.0	30.0	93.5	0.6	1.9	4.0	23.0

HCBS = home and community-based services.

Table 9
Demographic characteristics of dually eligible beneficiaries in Medicaid-covered nursing facilities by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
U.S.	28.5	71.5	11.0	15.0	33.7	40.3	81.2	14.4	1.9	2.5	29.0
Alabama	23.2	76.8	9.7	15.5	34.1	40.6	75.3	24.1	0.1	0.5	29.6
Alaska	39.6	60.4	16.4	22.2	37.6	23.8	68.4	3.5	0.2	28.0	28.3
Arkansas	26.3	73.7	9.6	14.7	33.0	42.6	82.5	16.3	0.1	1.0	28.4
California	34.2	65.8	14.8	16.5	33.1	35.7	71.4	11.8	6.3	10.5	27.8
Colorado	32.8	67.2	13.2	14.7	32.1	40.0	89.5	4.1	3.9	2.5	28.8
Connecticut	26.5	73.5	9.6	11.7	31.1	47.6	88.7	8.3	1.5	1.4	27.3
Delaware	27.8	72.2	10.5	14.6	33.7	41.2	73.3	24.6	1.0	1.1	29.5
District of Columbia	31.5	68.5	10.2	18.7	35.3	35.7	11.4	86.5	0.8	1.4	24.9
Florida	30.1	69.9	9.4	14.8	35.0	40.9	77.1	16.6	4.9	1.4	31.9
Georgia	27.9	72.1	11.2	16.5	34.7	37.6	68.1	30.9	0.2	0.7	28.8
Hawaii	35.1	64.9	10.3	14.0	35.2	40.5	25.8	0.8	1.2	72.1	27.5
Idaho	32.1	67.9	11.8	15.1	33.3	39.8	96.3	0.4	0.9	2.4	31.4
Illinois	32.3	67.7	17.8	14.9	30.9	36.4	81.0	15.9	1.2	1.9	26.3
Indiana	28.1	71.9	10.9	15.3	35.2	38.6	89.8	9.3	0.2	0.7	29.3
Iowa	27.7	72.3	9.0	13.0	31.6	46.4	97.6	1.4	0.2	0.8	29.8
Kansas	28.7	71.3	10.7	13.6	32.3	43.5	91.8	5.8	0.7	1.7	30.4
Kentucky	26.6	73.4	9.3	16.8	36.6	37.4	90.7	8.7	0.0	0.5	31.1
Louisiana	30.4	69.6	11.9	18.1	34.8	35.2	68.5	30.4	0.3	0.8	28.9
Maryland	29.7	70.3	11.1	15.9	35.0	37.9	64.3	32.9	0.5	2.3	28.5

(continued)

Table 9 (continued)
Demographic characteristics of dually eligible beneficiaries in Medicaid-covered nursing facilities by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
Massachusetts	26.2	73.8	9.6	12.4	32.3	45.7	92.7	4.3	0.8	2.1	28.6
Michigan	26.2	73.8	7.6	13.3	34.9	44.1	84.3	14.2	0.4	1.2	31.7
Minnesota	34.5	65.5	21.4	10.7	29.0	38.9	93.8	3.2	0.3	2.8	25.5
Mississippi	27.1	72.9	10.3	16.7	34.0	39.0	65.8	33.4	0.1	0.7	27.6
Missouri	27.8	72.2	12.6	14.6	33.0	39.8	87.1	12.0	0.2	0.7	29.4
Montana	30.3	69.7	10.6	15.4	32.2	41.8	93.0	0.2	0.3	6.5	29.4
Nebraska	27.8	72.2	11.7	13.3	30.6	44.4	94.6	3.5	0.3	1.6	30.1
Nevada	32.1	67.9	13.0	18.2	34.8	34.0	84.6	8.1	2.7	4.5	34.1
New Hampshire	22.6	77.4	5.7	11.5	33.1	49.7	99.1	0.4	0.1	0.4	29.8
New Jersey	25.3	74.7	10.2	13.4	32.1	44.3	79.1	16.5	2.4	2.0	28.1
New Mexico	33.4	66.6	9.0	15.0	34.9	41.0	76.6	2.4	11.3	9.7	30.6
New York	29.4	70.6	9.3	14.4	32.7	43.6	78.5	15.3	3.0	3.2	26.2
North Carolina	24.3	75.7	10.7	17.0	35.4	36.9	66.8	31.6	0.2	1.5	30.8
North Dakota	29.3	70.7	8.1	10.8	30.4	50.7	96.4	0.1	0.1	3.4	28.4
Ohio	28.3	71.7	12.5	15.2	34.7	37.6	85.5	13.3	0.3	0.9	28.8
Oklahoma	27.2	72.8	12.1	18.0	33.4	36.6	83.6	8.0	0.4	8.0	32.1
Oregon	34.4	65.6	13.3	16.8	33.9	36.0	94.5	2.3	0.5	2.8	35.8
Pennsylvania	23.3	76.7	8.1	13.1	34.7	44.1	88.1	10.3	0.5	1.1	29.7
Rhode Island	21.9	78.1	9.2	12.1	32.0	46.7	92.6	4.2	1.4	1.8	29.0
South Carolina	25.2	74.8	9.1	15.5	35.6	39.8	66.7	32.7	0.1	0.5	29.0
South Dakota	29.0	71.0	7.8	12.3	29.9	49.9	93.7	0.3	0.1	6.0	29.2

(continued)

Table 9 (continued)
Demographic characteristics of dually eligible beneficiaries in Medicaid-covered nursing facilities by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
Tennessee	27.2	72.8	10.4	16.9	36.0	36.8	82.3	16.9	0.1	0.7	29.4
Texas	29.4	70.6	10.3	17.0	35.0	37.8	77.9	13.5	7.0	1.6	28.5
Utah	33.1	66.9	17.1	17.7	33.0	32.2	94.0	0.9	1.6	3.6	33.0
Vermont	29.2	70.8	5.7	12.0	36.2	46.1	98.8	0.4	0.2	0.6	30.7
Virginia	27.1	72.9	11.3	17.0	34.5	37.2	68.8	29.2	0.4	1.6	29.3
Washington	30.7	69.3	14.7	15.0	32.2	38.0	90.1	3.3	1.0	5.6	31.6
West Virginia	27.0	73.0	9.1	17.3	36.5	37.1	95.4	3.8	0.0	0.8	27.2
Wisconsin	29.3	70.7	7.5	11.2	32.3	49.0	96.1	2.4	0.2	1.3	30.8
Wyoming	29.5	70.5	9.2	14.9	35.1	40.8	94.7	0.7	1.5	3.0	29.0

Table 10
Demographic characteristics of dually eligible beneficiaries in Medicare-covered skilled nursing facilities by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
U.S.	31.7	68.3	14.2	20.2	35.0	30.7	76.3	17.6	3.0	3.2	31.9
Alabama	25.4	74.6	12.2	19.6	34.4	33.8	71.4	28.0	0.1	0.6	33.6
Alaska	37.8	62.2	18.5	29.5	35.4	16.5	65.4	4.7	0.8	29.1	29.1
Arkansas	27.3	72.7	10.8	17.7	34.0	37.5	79.4	19.4	0.1	1.1	35.2
California	38.3	61.7	17.0	22.9	34.3	25.9	64.3	13.3	9.2	13.3	29.9
Colorado	33.6	66.4	17.1	21.0	34.6	27.4	87.3	5.1	5.5	2.1	29.4
Connecticut	30.3	69.7	13.9	16.5	32.9	36.7	85.0	10.7	2.5	1.7	29.0
Delaware	27.9	72.1	14.2	18.9	33.6	33.3	68.3	28.4	1.5	1.7	33.6
District of Columbia	34.2	65.8	17.0	24.4	33.4	25.3	6.9	91.0	0.9	1.2	31.5
Florida	33.7	66.3	13.2	20.2	35.7	30.9	71.4	18.6	8.4	1.6	32.4
Georgia	30.4	69.6	12.6	20.8	35.9	30.7	64.8	34.2	0.3	0.7	33.0
Hawaii	38.9	61.1	14.0	23.8	34.2	28.1	25.0	0.8	2.0	72.1	28.2
Idaho	32.2	67.8	18.4	22.6	31.5	27.6	94.9	0.7	1.7	2.7	34.3
Illinois	34.3	65.7	18.4	19.9	33.2	28.4	73.9	22.0	1.8	2.2	31.2
Indiana	33.1	66.9	15.5	21.6	35.6	27.3	87.4	11.6	0.3	0.7	32.9
Iowa	30.6	69.4	16.0	18.9	33.3	31.8	96.0	2.7	0.3	1.1	30.9
Kansas	31.4	68.6	15.5	18.2	33.5	32.8	89.1	8.1	0.8	2.0	32.5
Kentucky	29.7	70.3	11.7	21.6	37.5	29.3	90.2	9.4	0.0	0.4	34.0
Louisiana	30.9	69.1	12.2	19.7	35.8	32.2	65.1	33.7	0.4	0.8	34.2
Maryland	34.6	65.4	17.3	21.8	35.4	25.5	54.8	41.1	0.9	3.3	30.3

(continued)

Table 10 (continued)
Demographic characteristics of dually eligible beneficiaries in Medicare-covered skilled nursing facilities by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
Massachusetts	30.2	69.8	16.4	18.3	33.1	32.2	88.7	6.3	1.7	3.3	26.9
Michigan	30.6	69.4	13.0	20.0	36.1	30.9	78.2	19.7	0.5	1.6	33.4
Minnesota	37.3	62.7	29.2	14.4	29.2	27.1	92.6	4.0	0.4	3.0	24.9
Mississippi	29.9	70.1	12.3	21.8	35.1	30.9	60.9	38.5	0.1	0.5	30.2
Missouri	31.2	68.8	16.7	20.2	34.2	28.9	85.0	13.9	0.2	0.9	32.5
Montana	30.9	69.1	17.6	22.2	33.9	26.3	90.7	0.5	0.3	8.6	29.2
Nebraska	29.1	70.9	15.9	18.2	33.2	32.7	93.2	4.3	0.7	1.7	29.6
Nevada	34.3	65.7	15.1	24.6	34.6	25.7	79.9	10.2	4.0	5.8	36.2
New Hampshire	29.0	71.0	13.8	20.6	33.7	31.9	98.7	0.5	0.2	0.6	30.2
New Jersey	29.0	71.0	12.7	18.2	34.2	34.9	71.0	21.7	4.3	3.0	32.0
New Mexico	37.4	62.6	13.9	22.2	36.2	27.6	69.9	2.4	14.6	13.1	30.7
New York	32.3	67.7	10.2	17.9	35.2	36.8	75.6	16.3	4.0	4.1	32.1
North Carolina	26.2	73.8	13.4	21.2	36.6	28.8	64.6	33.8	0.2	1.4	33.7
North Dakota	35.0	65.0	12.8	15.7	33.8	37.7	93.3	0.3	0.1	6.3	32.6
Ohio	31.4	68.6	16.9	21.3	35.2	26.6	81.2	17.5	0.3	0.9	31.7
Oklahoma	27.9	72.1	14.5	22.5	33.8	29.3	81.4	8.6	0.7	9.3	35.1
Oregon	35.2	64.8	18.7	21.8	34.4	25.1	94.6	1.5	0.5	3.4	33.3
Pennsylvania	27.6	72.4	10.0	17.5	37.3	35.3	86.2	12.0	0.6	1.2	33.8
Rhode Island	27.5	72.5	15.7	18.3	34.0	32.0	90.1	6.3	1.5	2.0	29.5
South Carolina	27.7	72.3	11.8	20.5	37.6	30.0	62.3	37.1	0.1	0.5	32.7
South Dakota	31.0	69.0	12.5	17.1	31.5	38.9	89.3	0.4	0.1	10.2	33.3

(continued)

Table 10 (continued)
Demographic characteristics of dually eligible beneficiaries in Medicare-covered skilled nursing facilities by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
Tennessee	31.1	68.9	15.5	23.5	34.8	26.2	81.7	17.5	0.1	0.6	31.6
Texas	31.9	68.1	11.6	20.4	36.4	31.5	73.3	15.3	9.6	1.8	31.9
Utah	33.8	66.2	25.6	26.3	30.2	18.0	91.2	1.4	2.6	4.9	28.7
Vermont	33.4	66.6	12.5	18.8	36.4	32.3	98.5	0.0	0.1	1.4	34.8
Virginia	31.2	68.8	14.5	21.8	35.6	28.0	62.6	35.1	0.5	1.9	33.9
Washington	32.4	67.6	19.5	21.7	32.4	26.3	87.3	4.6	1.1	7.1	31.9
West Virginia	28.6	71.4	12.0	22.2	37.4	28.4	94.9	4.5	0.0	0.6	33.7
Wisconsin	33.2	66.8	13.4	16.7	35.3	34.6	94.3	3.5	0.4	1.8	31.7
Wyoming	33.6	66.4	16.9	21.7	35.4	26.0	94.3	0.3	2.0	3.4	29.9

Table 11
Demographic characteristics of dually eligible beneficiaries in aged or disabled HCBS waivers by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
U.S.	26.8	73.2	24.1	24.2	31.2	20.5	70.8	22.6	3.5	3.1	13.6
Alabama	21.3	78.7	25.4	20.9	29.0	24.8	50.8	48.4	0.1	0.7	12.4
Alaska	34.2	65.8	27.0	21.4	32.4	19.2	68.5	4.9	1.4	25.2	17.1
Arkansas	27.1	72.9	17.1	19.9	34.1	28.9	72.1	26.6	0.2	1.1	17.2
California	24.5	75.5	4.3	26.8	43.3	25.6	60.7	17.4	11.7	10.2	12.6
Colorado	33.7	66.3	33.5	19.5	27.1	20.0	84.5	4.8	8.1	2.6	12.1
Connecticut	24.0	76.0	5.3	28.6	39.1	27.0	73.6	16.6	7.2	2.6	11.8
Delaware	30.2	69.8	32.4	21.7	25.0	20.9	67.3	30.1	1.1	1.5	14.2
District of Columbia	23.3	76.7	14.3	25.9	34.5	25.3	3.2	94.9	0.6	1.4	15.4
Florida	21.5	78.5	10.9	23.9	36.1	29.2	59.7	24.0	14.3	2.0	14.3
Georgia	25.6	74.4	24.8	21.0	30.3	23.9	58.4	40.5	0.3	0.7	15.1
Hawaii	39.0	61.0	24.3	19.4	31.1	25.1	26.5	1.2	1.2	71.1	18.2
Idaho	33.5	66.5	34.6	19.3	25.4	20.7	93.7	0.5	2.3	3.5	14.6
Illinois	30.2	69.8	39.8	24.5	24.7	11.0	56.1	37.5	2.6	3.8	9.3
Indiana	25.7	74.3	39.7	23.8	23.4	13.2	84.3	14.2	0.3	1.2	13.9
Iowa	29.1	70.9	13.9	30.9	36.0	19.1	93.9	4.2	0.3	1.6	12.6
Kansas	27.6	72.4	34.5	23.5	25.7	16.3	83.2	12.7	1.5	2.7	11.4
Kentucky	30.1	69.9	33.3	26.1	26.7	13.9	90.2	9.2	0.1	0.5	13.4
Louisiana	24.5	75.5	19.9	22.7	33.5	23.9	42.8	56.2	0.5	0.5	12.7
Maryland	25.4	74.6	17.6	19.8	33.7	28.9	60.2	35.8	1.0	3.0	15.3

(continued)

Table 11 (continued)
Demographic characteristics of dually eligible beneficiaries in aged or disabled HCBS waivers by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
Massachusetts	19.1	80.9	8.4	31.4	37.2	23.0	77.3	11.6	3.8	7.4	11.8
Michigan	28.2	71.8	24.6	22.4	32.6	20.3	75.3	22.4	1.0	1.4	13.4
Minnesota	32.2	67.8	45.6	13.2	22.1	19.1	92.2	4.0	0.4	3.4	8.5
Mississippi	23.0	77.0	21.4	22.5	32.5	23.6	45.2	54.3	0.1	0.4	11.6
Missouri	22.9	77.1	6.4	36.3	38.4	18.9	81.3	17.6	0.2	0.9	13.3
Montana	36.6	63.4	56.4	13.5	15.5	14.6	91.2	0.2	0.4	8.2	9.1
Nebraska	23.0	77.0	18.6	17.0	32.7	31.7	94.5	2.4	0.9	2.2	13.0
Nevada	28.8	71.2	20.4	24.7	32.8	22.1	82.6	10.1	3.1	4.3	16.5
New Hampshire	29.3	70.7	30.8	22.6	27.2	19.4	97.8	0.8	0.3	1.1	12.2
New Jersey	23.7	76.3	8.3	13.9	34.2	43.5	78.9	16.6	2.6	1.9	48.7
New Mexico	29.4	70.6	24.5	18.6	30.7	26.2	70.2	2.6	19.8	7.5	15.2
New York	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
North Carolina	17.8	82.2	21.1	20.9	32.2	25.7	54.2	42.0	0.1	3.6	16.3
North Dakota	37.7	62.3	40.2	16.1	22.2	21.6	92.0	0.6	0.0	7.5	10.2
Ohio	23.9	76.1	20.4	29.7	33.4	16.6	75.6	22.7	0.5	1.3	13.8
Oklahoma	25.9	74.1	28.6	26.4	29.1	15.9	76.6	12.7	0.5	10.2	13.5
Oregon	31.1	68.9	26.7	20.7	29.0	23.6	93.4	2.0	1.1	3.5	18.8
Pennsylvania	25.7	74.3	13.6	23.9	37.1	25.4	76.8	19.6	1.5	2.2	18.4
Rhode Island	22.3	77.7	27.7	18.9	29.1	24.3	86.9	7.9	2.5	2.7	11.6
South Carolina	28.3	71.7	28.6	21.6	29.4	20.4	46.9	52.4	0.1	0.6	15.2
South Dakota	23.3	76.7	8.4	14.4	31.6	45.6	97.3	0.2	0.0	2.4	13.3

(continued)

Table 11 (continued)
Demographic characteristics of dually eligible beneficiaries in aged or disabled HCBS waivers by state, 2005

Location	Male (%)	Female (%)	Age <65 (%)	Age 65–74 (%)	Age 75–85 (%)	Age 85+ (%)	White (%)	Black (%)	Hispanic (%)	Other race (%)	Died (%)
Tennessee	28.6	71.4	27.9	20.8	25.9	25.3	37.3	61.6	0.0	1.1	19.7
Texas	29.3	70.7	24.0	23.4	31.7	20.9	64.8	17.0	16.5	1.6	13.3
Utah	22.5	77.5	10.3	28.3	37.5	24.0	91.7	0.7	3.4	4.2	15.2
Vermont	30.6	69.4	21.2	17.4	33.3	28.2	99.1	0.3	0.0	0.7	16.1
Virginia	24.2	75.8	23.4	22.1	31.5	23.0	46.9	49.7	0.8	2.6	18.9
Washington	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
West Virginia	29.7	70.3	31.9	25.1	26.1	16.9	95.6	3.9	0.0	0.5	14.8
Wisconsin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Wyoming	29.3	70.7	37.2	25.0	24.3	13.5	91.6	0.4	2.2	5.8	12.4

HCBS = home and community-based services.

NOTE: N/A indicates Not Applicable and is noted for states whose HCBS waiver enrollments are not available in the MAX data.

In the United States overall, 70% of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, or home and community-based waiver programs were originally entitled to Medicare as aged, compared to 30% originally entitled as disabled or having end-stage renal disease (**Table 12**). The original reason for entitlement varied among states, ranging from 57% entitled as aged in Minnesota to 79% in Wisconsin. We also looked at the percentage of dually eligible beneficiaries that qualified for Medicaid as medically needy. While Medically needy beneficiaries have higher incomes than other dually eligible beneficiaries, they also are in poor health because they qualify for Medicaid by virtue of having high medical expenditures. On average nationwide, 18% of dually eligible beneficiaries in these settings qualified for Medicaid as medically needy. However, no individuals qualified as medically needy in 17 states. With the exception of Indiana, none of these states had a medically needy program. (A small number of beneficiaries in Iowa were reported as medically needy in the MAX data, although the state does not have a medically needy program.) Among the states with a medically needy program, the proportion of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, or home and community-based waiver programs that qualified as medically needy varied considerably, from less than 10% in 18 states to more than 50% in 8 states. Dually eligible beneficiaries in Medicaid-covered nursing facilities are more likely to have been originally entitled to Medicare based on age (75%) than those in Medicare-covered skilled nursing facilities (70%) and those in home and community-based waivers (59%) (**Tables 13–15**). In 8 states, less than half of the dually eligible beneficiaries in home and community-based waivers were originally entitled to Medicare based on age. Nationally, 22% of dually eligible beneficiaries in Medicaid-covered nursing facilities qualified for Medicaid as medically needy, including 9 states where 50% or more were medically needy (Table 12). Beneficiaries in Medicare-covered skilled nursing facilities were somewhat less likely to be medically needy, 19% in the United States overall (Table 13). Only a small percentage of individuals in home and community-based waivers were medically needy, 3% nationally, although 55% in Nebraska and 76% in North Dakota qualified as medically needy (Table 14).

Health status, defined by the prevalence of selected chronic conditions, of the population of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and HCBS waiver programs is reported in **Table 16**, and data for those in Medicaid-covered nursing facilities, Medicare-covered skilled nursing facilities and in HCBS waivers are reported in **Tables 17, 18, and 19**, respectively. These data are based on the Chronic Condition flags in the CCW, and are based on condition-specific algorithms using Medicare claims data. These data may somewhat overstate condition prevalence, as claims data cannot distinguish between medical care to treat a condition and care received to diagnose or rule out a condition. However, the presence of these claims are at least a relative indicator of medical complexity and ill health.

Table 12
Eligibility characteristics of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers by state, 2005

Location	Original reason for Medicare entitlement: aged (%)	Original reason for Medicare entitlement: disabled or ESRD (%)	Medicaid eligibility: medically needy (%)
U.S.	70.3	29.7	17.6
Alabama	69.4	30.6	0.0
Alaska	64.1	35.9	0.0
Arkansas	69.8	30.2	0.1
California	69.5	30.5	56.8
Colorado	62.6	37.4	0.0
Connecticut	75.5	24.5	12.1
Delaware	67.5	32.5	0.0
District of Columbia	72.2	27.8	65.3
Florida	76.0	24.0	0.2
Georgia	66.7	33.3	0.1
Hawaii	72.3	27.7	35.6
Idaho	59.9	40.1	0.0
Illinois	60.0	40.0	53.0
Indiana	72.2	27.8	0.0
Iowa	71.9	28.1	0.7
Kansas	64.3	35.7	1.0
Kentucky	66.8	33.2	5.9
Louisiana	71.3	28.7	0.2
Maryland	74.2	25.8	74.1
Massachusetts	75.2	24.8	9.7
Michigan	74.5	25.5	9.4
Minnesota	56.5	43.5	29.7
Mississippi	67.0	33.0	0.0
Missouri	69.3	30.7	0.0
Montana	59.6	40.4	65.3
Nebraska	71.7	28.3	78.8

(continued)

Table 12 (continued)
Eligibility characteristics of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers by state, 2005

Location	Original reason for Medicare entitlement: aged (%)	Original reason for Medicare entitlement: disabled or ESRD (%)	Medicaid eligibility: medically needy (%)
Nevada	69.7	30.3	0.0
New Hampshire	72.7	27.3	44.0
New Jersey	73.7	26.3	0.2
New Mexico	71.3	28.7	0.0
New York	76.7	23.3	86.9
North Carolina	68.6	31.4	13.6
North Dakota	75.8	24.2	94.2
Ohio	68.7	31.3	0.0
Oklahoma	64.9	35.1	0.0
Oregon	62.2	37.8	0.0
Pennsylvania	76.4	23.6	0.2
Rhode Island	67.9	32.1	2.0
South Carolina	63.9	36.1	0.0
South Dakota	77.9	22.1	0.0
Tennessee	69.8	30.2	7.1
Texas	72.7	27.3	0.0
Utah	66.3	33.7	9.9
Vermont	73.9	26.1	7.3
Virginia	68.4	31.6	0.2
Washington	70.0	30.0	1.6
West Virginia	68.9	31.1	1.4
Wisconsin	78.9	21.1	9.8
Wyoming	66.4	33.6	0.0

ESRD = end-stage renal disease; HCBS = home and community-based services.

Table 13
Eligibility characteristics of dually eligible beneficiaries in Medicaid-covered nursing facilities by state, 2005

Location	Original reason for Medicare entitlement: aged (%)	Original reason for Medicare entitlement: disabled or ESRD (%)	Medicaid eligibility: medically needy (%)
U.S.	75.1	24.9	22.4
Alabama	73.4	26.6	0.0
Alaska	70.4	29.6	0.0
Arkansas	74.0	26.0	0.0
California	70.4	29.6	75.5
Colorado	75.0	25.0	0.0
Connecticut	78.2	21.8	14.3
Delaware	74.5	25.5	0.0
District of Columbia	75.0	25.0	87.5
Florida	78.6	21.4	0.1
Georgia	71.2	28.8	0.0
Hawaii	78.7	21.3	46.1
Idaho	74.4	25.6	0.0
Illinois	68.6	31.4	84.8
Indiana	75.5	24.5	0.0
Iowa	77.2	22.8	0.7
Kansas	76.1	23.9	0.6
Kentucky	74.7	25.3	7.2
Louisiana	72.8	27.2	0.2
Maryland	76.9	23.1	91.9
Massachusetts	78.3	21.7	9.0
Michigan	79.4	20.6	11.2
Minnesota	70.1	29.9	45.6
Mississippi	72.4	27.6	0.0
Missouri	72.1	27.9	0.0
Montana	75.5	24.5	84.0
Nebraska	74.9	25.1	93.0

(continued)

Table 13 (continued)
Eligibility characteristics of dually eligible beneficiaries in Medicaid-covered nursing facilities by state, 2005

Location	Original reason for Medicare entitlement: aged (%)	Original reason for Medicare entitlement: disabled or ESRD (%)	Medicaid eligibility: medically needy (%)
Nevada	74.0	26.0	0.0
New Hampshire	81.5	18.5	50.7
New Jersey	75.2	24.8	0.2
New Mexico	77.0	23.0	0.0
New York	77.0	23.0	90.6
North Carolina	72.1	27.9	20.1
North Dakota	79.0	21.0	98.2
Ohio	73.8	26.2	0.0
Oklahoma	73.5	26.5	0.0
Oregon	71.8	28.2	0.0
Pennsylvania	78.6	21.4	0.2
Rhode Island	75.3	24.7	2.0
South Carolina	73.0	27.0	0.0
South Dakota	79.3	20.7	0.0
Tennessee	73.1	26.9	4.2
Texas	77.5	22.5	0.0
Utah	69.0	31.0	9.9
Vermont	80.5	19.5	2.4
Virginia	72.8	27.2	0.3
Washington	71.9	28.1	1.6
West Virginia	74.5	25.5	1.2
Wisconsin	80.7	19.3	9.8
Wyoming	78.2	21.8	0.0

ESRD = end-stage renal disease

Table 14
Eligibility characteristics of dually eligible beneficiaries in Medicare-covered skilled nursing facilities by state, 2005

Location	Original reason for Medicare entitlement: aged (%)	Original reason for Medicare entitlement: disabled or ESRD (%)	Medicaid eligibility: medically needy (%)
U.S.	70.4	29.6	18.7
Alabama	69.3	30.7	0.0
Alaska	72.0	28.0	0.0
Arkansas	71.2	28.8	0.3
California	67.4	32.6	42.3
Colorado	68.0	32.0	0.0
Connecticut	71.8	28.2	15.0
Delaware	69.4	30.6	0.0
District of Columbia	68.8	31.2	64.5
Florida	73.7	26.3	0.3
Georgia	68.7	31.3	0.4
Hawaii	76.8	23.2	27.6
Idaho	65.9	34.1	0.1
Illinois	66.6	33.4	66.4
Indiana	68.9	31.1	0.0
Iowa	67.6	32.4	1.7
Kansas	70.2	29.8	2.5
Kentucky	70.6	29.4	7.7
Louisiana	72.0	28.0	0.1
Maryland	69.7	30.3	72.2
Massachusetts	69.4	30.6	9.7
Michigan	72.0	28.0	10.0
Minnesota	61.6	38.4	35.3
Mississippi	69.5	30.5	0.0
Missouri	66.0	34.0	0.0
Montana	67.1	32.9	73.3
Nebraska	69.1	30.9	69.4

(continued)

Table 14 (continued)
Eligibility characteristics of dually eligible beneficiaries in Medicare-covered skilled nursing facilities by state, 2005

Location	Original reason for Medicare entitlement: aged (%)	Original reason for Medicare entitlement: disabled or ESRD (%)	Medicaid eligibility: medically needy (%)
Nevada	70.0	30.0	0.0
New Hampshire	70.4	29.6	40.7
New Jersey	71.7	28.3	0.1
New Mexico	70.3	29.7	0.0
New York	75.8	24.2	81.1
North Carolina	69.4	30.6	14.5
North Dakota	71.5	28.5	89.3
Ohio	67.1	32.9	0.0
Oklahoma	69.8	30.2	0.0
Oregon	66.4	33.6	0.0
Pennsylvania	75.5	24.5	0.3
Rhode Island	66.4	33.6	2.0
South Carolina	68.6	31.4	0.0
South Dakota	73.8	26.2	0.0
Tennessee	65.9	34.1	10.0
Texas	75.0	25.0	0.0
Utah	59.0	41.0	12.0
Vermont	69.1	30.9	18.5
Virginia	68.5	31.5	0.2
Washington	65.3	34.7	1.4
West Virginia	71.6	28.4	2.4
Wisconsin	73.0	27.0	9.6
Wyoming	67.9	32.1	0.0

ESRD = end-stage renal disease

Table 15
Eligibility characteristics of dually eligible beneficiaries in aged or disabled HCBS waivers
by state, 2005

Location	Original reason for Medicare entitlement: aged (%)	Original reason for Medicare entitlement: disabled or ESRD (%)	Medicaid eligibility: medically needy (%)
U.S.	59.0	41.0	2.6
Alabama	57.7	42.3	0.0
Alaska	61.2	38.8	0.0
Arkansas	63.3	36.7	0.0
California	73.5	26.5	8.8
Colorado	52.4	47.6	0.0
Connecticut	74.5	25.5	2.5
Delaware	50.9	49.1	0.0
District of Columbia	68.7	31.3	5.1
Florida	69.9	30.1	0.1
Georgia	55.2	44.8	0.0
Hawaii	61.9	38.1	22.3
Idaho	51.5	48.5	0.0
Illinois	47.6	52.4	3.5
Indiana	42.8	57.2	0.0
Iowa	65.7	34.3	0.1
Kansas	50.5	49.5	0.6
Kentucky	49.1	50.9	1.5
Louisiana	64.0	36.0	0.0
Maryland	69.5	30.5	4.8
Massachusetts	72.8	27.2	11.8
Michigan	56.8	43.2	0.3
Minnesota	46.0	54.0	15.7
Mississippi	58.7	41.3	0.0
Missouri	68.2	31.8	0.0
Montana	33.6	66.4	35.7
Nebraska	68.1	31.9	55.3

(continued)

Table 15 (continued)
Eligibility characteristics of dually eligible beneficiaries in aged or disabled HCBS waivers
by state, 2005

Location	Original reason for Medicare entitlement: aged (%)	Original reason for Medicare entitlement: disabled or ESRD (%)	Medicaid eligibility: medically needy (%)
Nevada	62.6	37.4	0.0
New Hampshire	51.1	48.9	24.0
New Jersey	77.1	22.9	0.1
New Mexico	59.0	41.0	0.0
New York	N/A	N/A	N/A
North Carolina	61.4	38.6	0.8
North Dakota	47.1	52.9	75.9
Ohio	60.7	39.3	0.0
Oklahoma	54.6	45.4	0.0
Oregon	59.1	40.9	0.0
Pennsylvania	71.9	28.1	0.1
Rhode Island	54.3	45.7	1.3
South Carolina	51.3	48.7	0.0
South Dakota	78.4	21.6	0.0
Tennessee	57.6	42.4	1.8
Texas	60.5	39.5	0.0
Utah	68.5	31.5	0.3
Vermont	63.0	37.0	7.4
Virginia	60.4	39.6	0.1
Washington	N/A	N/A	N/A
West Virginia	48.7	51.3	0.3
Wisconsin	N/A	N/A	N/A
Wyoming	48.8	51.2	0.0

ESRD = end-stage renal disease; HCBS = home and community-based services.

NOTE: N/A indicates Not Applicable and is noted for states whose HCBS waiver enrollments are not available in the MAX data.

Table 16
Presence of selected chronic conditions among dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers by state, 2005

Location	Alzheimer's disease and related disorders (%)	Heart failure (%)	Chronic obstructive pulmonary disease (%)	Diabetes (%)	Stroke/transient ischemic attack (%)	Ischemic heart disease (%)	Count of chronic conditions (mean)
U.S.	53.9	54.0	35.2	42.2	33.7	60.4	2.8
Alabama	58.4	57.3	37.3	44.9	40.0	55.6	2.9
Alaska	43.7	43.2	32.6	35.7	27.1	44.6	2.3
Arkansas	54.9	54.7	34.3	38.7	37.6	59.8	2.8
California	48.3	51.3	37.9	43.4	33.0	60.8	2.7
Colorado	40.4	44.1	34.8	32.0	21.9	44.8	2.2
Connecticut	57.7	49.9	31.6	40.6	29.8	62.0	2.7
Delaware	63.0	54.2	34.5	44.8	39.9	65.0	3.0
District of Columbia	60.6	58.7	24.1	53.4	39.2	62.4	3.0
Florida	57.5	53.3	42.2	42.8	38.7	67.8	3.0
Georgia	57.6	52.0	34.8	43.9	36.7	55.5	2.8
Hawaii	55.4	40.1	20.4	41.4	37.4	46.3	2.4
Idaho	37.2	45.3	28.6	33.7	22.7	42.4	2.1
Illinois	42.3	51.6	32.4	40.4	27.4	55.8	2.5
Indiana	59.4	53.5	37.0	40.4	36.1	58.5	2.8
Iowa	44.0	49.3	32.2	36.4	26.5	52.0	2.4
Kansas	43.2	51.1	31.9	36.7	26.4	53.6	2.4
Kentucky	53.2	58.1	44.4	43.6	35.2	62.1	3.0
Louisiana	56.6	56.6	37.4	46.4	37.4	60.5	2.9
Maryland	62.8	55.3	33.5	45.7	40.6	62.7	3.0
Massachusetts	59.1	50.5	33.0	40.2	28.7	60.5	2.7
Michigan	61.9	61.5	37.9	46.9	39.1	73.6	3.2
Minnesota	32.4	35.7	22.9	30.8	19.0	38.6	1.8
Mississippi	49.8	57.0	33.3	45.1	35.9	56.5	2.8

(continued)

Table 16 (continued)
Presence of selected chronic conditions among dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers by state, 2005

Location	Alzheimer's disease and related disorders (%)	Heart failure (%)	Chronic obstructive pulmonary disease (%)	Diabetes (%)	Stroke/transient ischemic attack (%)	Ischemic heart disease (%)	Count of chronic conditions (mean)
Missouri	46.2	54.2	39.1	40.8	31.2	63.3	2.7
Montana	43.5	38.8	27.3	27.1	21.4	35.6	1.9
Nebraska	46.9	51.3	29.2	33.2	26.1	52.0	2.4
Nevada	50.1	50.7	48.0	36.5	33.6	54.9	2.7
New Hampshire	57.8	46.7	32.9	35.6	28.3	55.6	2.6
New Jersey	67.8	60.0	36.9	45.6	39.6	75.1	3.3
New Mexico	54.8	49.8	33.6	37.4	28.2	50.0	2.5
New York	65.1	61.3	33.6	44.6	37.0	73.4	3.1
North Carolina	50.7	53.2	33.4	45.4	35.2	54.5	2.7
North Dakota	54.9	53.5	26.9	32.0	26.6	48.9	2.4
Ohio	51.8	53.8	37.0	43.9	32.5	61.1	2.8
Oklahoma	42.8	55.2	38.4	38.3	30.6	61.2	2.7
Oregon	38.1	40.9	27.9	33.3	24.6	42.1	2.1
Pennsylvania	59.4	56.0	34.8	43.5	36.7	67.5	3.0
Rhode Island	50.9	47.4	32.6	41.0	24.6	60.9	2.6
South Carolina	51.9	51.5	30.7	46.4	37.6	54.3	2.7
South Dakota	49.5	54.0	29.7	30.7	25.4	48.7	2.4
Tennessee	62.7	55.9	39.6	42.9	37.3	59.2	3.0
Texas	56.4	61.1	37.0	48.0	38.4	64.5	3.1
Utah	50.6	52.4	25.1	37.4	26.6	45.1	2.4
Vermont	54.2	46.5	33.2	34.8	30.9	54.2	2.5
Virginia	54.4	50.7	33.2	44.1	37.6	54.9	2.7
Washington	53.6	49.5	31.7	36.5	29.4	47.0	2.5
West Virginia	56.6	56.4	43.3	43.8	35.6	64.0	3.0
Wisconsin	58.9	49.7	25.3	33.6	27.2	50.2	2.4
Wyoming	42.6	50.1	38.5	34.1	23.8	46.3	2.4

HCBS = home and community-based services.

Table 17

Presence of selected chronic conditions among dually eligible beneficiaries in Medicaid-covered nursing facilities by state, 2005

Location	Alzheimer's disease and related disorders (%)	Heart failure (%)	Chronic obstructive pulmonary disease (%)	Diabetes (%)	Stroke/transient ischemic attack (%)	Ischemic heart disease (%)	Count of chronic conditions (mean)
U.S.	66.5	55.7	34.3	40.9	37.2	61.1	3.0
Alabama	70.6	58.8	37.5	44.5	44.4	56.2	3.1
Alaska	62.1	46.0	29.0	34.9	36.6	45.2	2.5
Arkansas	68.0	55.5	32.8	37.8	40.7	59.6	2.9
California	58.7	50.1	36.3	40.8	36.1	58.8	2.8
Colorado	60.2	49.0	35.1	29.9	26.1	46.8	2.5
Connecticut	72.2	50.6	30.9	37.6	33.7	62.0	2.9
Delaware	75.9	55.9	34.3	43.4	42.5	66.4	3.2
District of Columbia	73.9	59.2	23.2	53.1	42.9	63.1	3.2
Florida	67.6	54.0	40.8	41.6	41.5	67.2	3.1
Georgia	68.9	52.5	34.4	42.7	39.2	55.2	2.9
Hawaii	65.3	39.8	18.2	41.0	41.8	46.9	2.5
Idaho	60.6	52.4	28.1	33.4	28.1	46.0	2.5
Illinois	60.6	57.1	33.3	39.2	33.3	57.7	2.8
Indiana	65.6	53.8	35.8	39.4	37.8	58.7	2.9
Iowa	59.6	51.6	28.7	34.1	29.6	51.0	2.5
Kansas	62.9	56.8	30.0	34.2	31.3	55.9	2.7
Kentucky	68.8	60.0	42.7	42.2	40.0	62.9	3.2
Louisiana	61.7	56.7	37.6	45.8	38.4	60.2	3.0
Maryland	69.5	56.7	33.8	45.7	43.3	63.4	3.1
Massachusetts	70.5	51.8	32.4	38.4	31.6	60.9	2.9
Michigan	72.3	62.4	36.8	45.6	41.8	74.5	3.3
Minnesota	49.5	42.7	23.5	31.1	25.0	42.8	2.1
Mississippi	69.8	57.4	34.1	42.9	41.4	56.0	3.0
Missouri	64.9	55.3	35.2	38.1	35.7	61.6	2.9

(continued)

Table 17 (continued)

Presence of selected chronic conditions among dually eligible beneficiaries in Medicaid-covered nursing facilities by state, 2005

Location	Alzheimer's disease and related disorders (%)	Heart failure (%)	Chronic obstructive pulmonary disease (%)	Diabetes (%)	Stroke/transient ischemic attack (%)	Ischemic heart disease (%)	Count of chronic conditions (mean)
Montana	59.8	46.9	31.4	29.5	26.8	42.0	2.4
Nebraska	56.6	52.7	28.3	32.1	28.3	51.9	2.5
Nevada	64.0	52.0	48.4	35.9	37.0	54.4	2.9
New Hampshire	71.0	47.8	30.2	33.2	31.0	57.0	2.7
New Jersey	73.7	60.1	36.2	44.3	41.1	75.1	3.3
New Mexico	68.3	52.0	33.6	35.2	30.2	51.2	2.7
New York	70.2	62.1	33.2	44.1	38.5	73.9	3.2
North Carolina	65.4	54.1	32.1	44.3	39.8	53.8	2.9
North Dakota	60.4	54.5	25.5	31.8	27.6	49.3	2.5
Ohio	66.0	55.0	34.7	42.0	36.0	60.5	2.9
Oklahoma	63.4	57.2	35.4	35.2	36.2	60.8	2.9
Oregon	59.0	46.1	26.6	33.0	31.4	43.3	2.4
Pennsylvania	68.4	56.6	34.2	42.1	38.8	67.6	3.1
Rhode Island	65.8	49.6	30.8	40.2	26.7	61.8	2.7
South Carolina	72.4	53.6	29.5	44.0	42.9	54.4	3.0
South Dakota	55.2	54.5	29.6	30.3	26.9	48.7	2.5
Tennessee	72.6	56.4	37.7	42.1	40.2	58.9	3.1
Texas	68.2	62.5	35.6	45.3	41.2	63.0	3.2
Utah	60.1	53.6	24.5	36.7	28.4	44.4	2.5
Vermont	68.4	46.9	31.5	32.9	33.5	53.8	2.7
Virginia	68.2	51.5	33.0	42.9	41.5	55.5	2.9
Washington	60.4	49.7	30.2	35.3	31.2	46.4	2.5
West Virginia	69.1	57.8	41.4	42.5	38.6	64.9	3.1
Wisconsin	63.2	50.2	24.6	32.9	28.2	50.4	2.5
Wyoming	60.0	53.5	36.4	32.6	27.3	47.7	2.6

Table 18
Presence of selected chronic conditions among dually eligible beneficiaries in Medicare-covered skilled nursing facilities
by state, 2005

Location	Alzheimer's disease and related disorders (%)	Heart failure (%)	Chronic obstructive pulmonary disease (%)	Diabetes (%)	Stroke/transient ischemic attack (%)	Ischemic heart disease (%)	Count of chronic conditions (mean)
U.S.	48.2	57.8	40.3	46.3	34.0	64.8	2.9
Alabama	55.9	60.6	42.5	47.5	40.6	59.9	3.1
Alaska	29.1	48.0	40.9	42.1	27.6	50.0	2.4
Arkansas	54.9	60.7	41.0	42.0	39.9	65.7	3.0
California	39.0	54.5	42.0	48.1	31.4	64.9	2.8
Colorado	37.4	52.9	43.1	35.9	24.0	52.1	2.5
Connecticut	54.8	53.8	36.3	43.8	30.1	64.0	2.8
Delaware	59.0	59.8	37.2	49.0	39.5	68.3	3.1
District of Columbia	47.6	56.3	26.6	56.1	36.0	61.1	2.8
Florida	48.9	54.9	46.0	45.9	37.1	69.9	3.0
Georgia	53.4	54.2	38.6	46.5	35.8	59.2	2.9
Hawaii	38.8	45.1	24.6	47.2	34.9	52.6	2.4
Idaho	35.3	55.3	35.7	41.1	24.4	47.9	2.4
Illinois	47.9	61.0	39.3	45.4	33.3	63.5	2.9
Indiana	48.2	58.0	43.4	46.5	35.4	62.7	2.9
Iowa	39.1	55.5	38.8	41.9	28.5	57.0	2.6
Kansas	45.1	59.1	38.7	41.1	29.8	59.8	2.7
Kentucky	50.4	62.0	50.0	46.5	36.7	66.7	3.1
Louisiana	54.6	61.2	41.9	49.6	38.6	64.8	3.1
Maryland	48.2	56.2	36.8	48.9	36.8	63.5	2.9
Massachusetts	47.7	51.5	36.8	43.0	26.8	61.7	2.7
Michigan	50.9	63.0	43.0	51.6	37.3	75.3	3.2
Minnesota	27.0	44.4	30.2	36.5	20.3	46.6	2.0
Mississippi	48.5	59.2	38.1	46.0	36.3	60.5	2.9
Missouri	45.8	57.7	43.7	44.2	33.4	64.8	2.9

(continued)

Table 18 (continued)
Presence of selected chronic conditions among dually eligible beneficiaries in Medicare-covered skilled nursing facilities
by state, 2005

Location	Alzheimer's disease and related disorders (%)	Heart failure (%)	Chronic obstructive pulmonary disease (%)	Diabetes (%)	Stroke/transient ischemic attack (%)	Ischemic heart disease (%)	Count of chronic conditions (mean)
Montana	34.0	48.4	38.9	34.7	23.7	47.7	2.3
Nebraska	36.0	56.0	36.5	37.8	25.2	56.5	2.5
Nevada	45.6	54.1	52.9	40.4	32.7	57.5	2.8
New Hampshire	44.8	49.5	39.8	40.6	27.9	58.8	2.6
New Jersey	58.0	63.0	41.6	51.1	39.0	77.8	3.3
New Mexico	42.9	51.5	37.7	43.3	27.6	52.9	2.6
New York	54.2	62.2	36.6	48.0	35.0	74.5	3.1
North Carolina	44.6	54.8	36.7	46.4	32.5	56.7	2.7
North Dakota	40.6	58.0	33.9	36.4	25.5	53.6	2.5
Ohio	47.0	58.5	42.8	48.5	33.4	65.7	3.0
Oklahoma	45.4	59.8	41.5	40.2	32.8	63.6	2.8
Oregon	31.3	49.1	34.1	37.3	26.8	48.8	2.3
Pennsylvania	51.8	59.6	39.6	47.6	36.7	70.3	3.1
Rhode Island	44.8	52.6	37.4	45.4	24.0	64.4	2.7
South Carolina	49.2	54.8	34.5	48.2	36.7	57.9	2.8
South Dakota	35.9	59.9	38.1	37.8	24.7	54.6	2.5
Tennessee	47.8	57.8	44.8	45.5	33.6	62.3	2.9
Texas	54.4	63.5	40.8	49.5	39.1	67.4	3.1
Utah	33.1	52.3	28.8	42.0	21.7	47.5	2.3
Vermont	36.1	50.9	41.0	40.3	28.2	59.4	2.6
Virginia	47.2	53.3	37.2	47.7	36.4	58.7	2.8
Washington	36.7	50.5	37.5	41.6	25.9	50.0	2.4
West Virginia	48.9	59.6	49.3	47.9	34.6	68.5	3.1
Wisconsin	39.1	52.0	31.0	39.3	25.2	54.0	2.4
Wyoming	35.2	55.8	45.7	39.1	23.9	52.9	2.5

Table 19

Presence of selected chronic conditions among dually eligible beneficiaries in aged or disabled HCBS waivers by state, 2005

Location	Alzheimer's disease and related disorders (%)	Heart failure (%)	Chronic obstructive pulmonary disease (%)	Diabetes (%)	Stroke/transient ischemic attack (%)	Ischemic heart disease (%)	Count of chronic conditions (mean)
U.S.	26.8	50.7	36.9	45.1	27.2	58.8	2.5
Alabama	23.3	53.9	35.5	46.9	28.0	53.0	2.4
Alaska	38.9	42.8	33.6	35.5	23.7	44.2	2.2
Arkansas	34.2	54.0	35.4	40.5	33.2	60.6	2.6
California	29.2	61.0	44.2	52.0	31.6	71.6	2.9
Colorado	23.9	40.8	35.4	34.1	18.8	44.1	2.0
Connecticut	29.0	49.6	33.3	47.6	22.7	63.5	2.5
Delaware	32.6	50.0	36.5	47.6	35.3	61.3	2.6
District of Columbia	35.5	60.0	25.9	53.5	32.8	62.7	2.7
Florida	32.4	54.3	45.5	48.4	35.1	72.0	2.9
Georgia	35.0	51.4	35.7	46.8	32.7	56.3	2.6
Hawaii	47.2	40.1	23.3	42.4	33.2	44.3	2.3
Idaho	23.7	42.0	29.4	34.0	19.7	41.0	1.9
Illinois	17.2	44.6	31.6	42.5	19.6	53.9	2.1
Indiana	22.2	51.5	42.4	46.3	27.8	55.6	2.5
Iowa	17.2	47.5	39.4	40.4	22.0	55.6	2.2
Kansas	18.7	44.5	34.9	40.2	20.8	51.6	2.1
Kentucky	24.0	55.5	47.8	47.1	27.3	61.1	2.6
Louisiana	36.6	55.8	32.9	49.0	35.5	62.4	2.7
Maryland	54.6	53.4	32.1	46.8	38.2	63.9	2.9
Massachusetts	26.7	51.0	36.2	51.5	22.7	63.6	2.5
Michigan	30.4	60.4	41.7	51.6	33.2	72.5	2.9
Minnesota	19.7	30.5	22.6	31.0	14.8	35.8	1.5
Mississippi	24.7	57.9	31.3	49.3	30.1	57.4	2.5
Missouri	20.7	54.2	45.1	45.2	25.7	67.6	2.6

(continued)

Table 19 (continued)

Presence of selected chronic conditions among dually eligible beneficiaries in aged or disabled HCBS waivers by state, 2005

Location	Alzheimer's disease and related disorders (%)	Heart failure (%)	Chronic obstructive pulmonary disease (%)	Diabetes (%)	Stroke/transient ischemic attack (%)	Ischemic heart disease (%)	Count of chronic conditions (mean)
Montana	20.3	25.1	19.6	21.7	13.0	24.1	1.2
Nebraska	26.7	48.9	31.0	34.6	22.4	52.8	2.2
Nevada	29.5	48.4	47.7	37.2	29.4	56.0	2.5
New Hampshire	28.1	47.1	40.8	42.9	23.6	54.1	2.4
New Jersey	55.8	61.9	41.7	47.0	36.8	77.8	3.2
New Mexico	29.6	47.3	33.4	41.2	26.1	48.8	2.3
New York	20.0	40.0	20.0	20.0	20.0	40.0	1.6
North Carolina	30.7	54.3	34.9	49.4	31.4	57.3	2.6
North Dakota	25.2	37.4	27.1	28.8	19.9	39.6	1.8
Ohio	25.6	53.4	42.4	48.8	27.5	64.1	2.6
Oklahoma	19.2	53.5	42.4	42.7	24.9	62.6	2.5
Oregon	31.3	39.9	29.0	33.8	22.4	42.4	2.0
Pennsylvania	36.7	55.5	36.3	48.2	33.1	68.7	2.8
Rhode Island	23.8	43.6	35.9	43.6	21.1	60.9	2.3
South Carolina	29.8	49.8	31.7	50.3	33.4	54.6	2.5
South Dakota	32.1	54.7	28.1	29.5	21.0	50.0	2.2
Tennessee	49.0	51.4	28.2	47.0	42.6	47.2	2.7
Texas	32.0	59.4	41.0	55.0	34.7	69.5	2.9
Utah	28.6	55.6	27.9	39.4	24.4	52.5	2.3
Vermont	34.4	46.4	35.6	38.3	28.8	53.4	2.4
Virginia	33.0	51.4	33.4	47.2	33.5	55.1	2.5
Washington	6.3	12.5	6.3	18.8	12.5	25.0	0.8
West Virginia	24.2	52.9	47.7	47.4	30.2	61.7	2.6
Wisconsin	25.0	50.0	12.5	37.5	37.5	62.5	2.3
Wyoming	16.9	44.5	41.7	37.3	19.3	44.9	2.0

HCBS = home and community-based services.

For the United States overall, 54% of this population had Alzheimer’s disease or a related dementia (ADRD), 54% heart failure, 35% chronic obstructive pulmonary disease (COPD), 42% diabetes, 34% had a history of stroke or transient ischemic attack, with an average of 2.8 of these conditions. The range of conditions varied by state: the average number of conditions ranged from 1.8 in Minnesota to 3.2 in Michigan. The prevalence rates for individual conditions varied markedly by state. For example, the prevalence of ADRD among dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and home and community-based waiver programs ranged from 38% in Oregon to 68% in New Jersey. Heart failure rates varied from 36% in Minnesota to 62% in Michigan. COPD rates ranged from 24% in the District of Columbia and 25% in Utah and Wisconsin, to 42% in Florida and 44% in Kentucky. Diabetes prevalence rates ranged from 27% in Montana to 53% in the District of Columbia. A history of stroke or transient ischemic attacks ranged from a low of 21% in Montana to 40% in Maryland. Ischemic heart disease rates ranged from 36% in Montana to more than twice that, 75%, in New Jersey.

The prevalence rates and average number of conditions varies by nursing facilities, skilled nursing facilities, and HCBS waivers (**Tables 17–19**). Those in Medicaid-covered nursing facilities had the highest rates of these chronic conditions overall (mean = 3.0, range = 2.1–3.3) while those enrolled in HCBS waivers had the lowest (mean = 2.5, range = 0.8–3.2). For specific conditions, 67% of dually eligible beneficiaries in a Medicaid-covered nursing facility had ADRD, compared to 48% of those in a Medicare-covered skilled nursing facility and 27% of those in enrolled HCBS waivers. However, those in Medicare-covered skilled nursing facilities had higher rates of heart failure, COPD, diabetes, and ischemic heart disease compared to either of the other groups.

SECTION 5
POTENTIALLY AVOIDABLE HOSPITALIZATIONS RATES AND COSTS

5.1 Potentially Avoidable Hospitalizations as a Proportion of Total Hospitalizations from All Settings

Table 20 provides an overview of the total national number of hospitalizations and associated costs for the study sample from all settings. The table reports the number and percentage of those hospitalizations and costs attributable to potentially avoidable hospitalizations. **Table 21** breaks this information down further by all settings. In 2005, there were just over one million dually eligible beneficiaries with at least 1 day in a Medicaid nursing facility, a little over half a million duals with at least 1 day in a Medicare skilled nursing facility, and almost 400,000 persons with at least 1 day on Medicaid home and community-based services aged/disabled waivers. The data in this section are based on the full list of conditions associated with potentially avoidable hospitalizations from Medicaid-covered nursing facility stays, and Medicare-covered skilled nursing facility stays, and the reduced list from HCBS waiver stays. Data regarding the potentially avoidable hospitalization rates from HCBS stays using the longer list are presented in Appendix C and show almost twice as many hospitalizations.

Table 20
Hospitalizations of dually eligible beneficiaries from nursing facility, skilled nursing facility and HCBS waiver programs, 2005

Category	All hospitalizations	Potentially avoidable hospitalizations	Potentially avoidable as a percentage of hospitalizations and costs
U.S. totals	958,837	382,846	38.8%
U.S. total Medicare and Medicaid costs	\$9,482,019,526	\$3,126,998,895	33.0%
Average costs per hospitalization	\$9,889	\$7,846	79.3%

HCBS = home and community-based services.

For this population, there were 958,837 hospitalizations during 2005. Of these, overall 382,846 hospitalizations from these locations could be considered potentially avoidable. Over half of these (240,753) originated from Medicaid-covered nursing facility stays. The total Medicare and Medicaid costs of these hospitalizations was \$3.1 billion, with almost \$2 billion for hospitalizations from Medicaid-covered nursing facility stays, \$.738 billion from Medicare-covered skilled nursing facility stays, and \$.463 billion for persons hospitalized while they were on Medicaid HCBS aged/disabled waivers (using the reduced condition list for HCBS waiver stays).

Table 21
Summary results for potentially avoidable hospitalizations for dual eligible beneficiaries receiving nursing facility, skilled nursing facility, and Medicaid home and community-based services waiver services, 2005

Category	All groups combined	Beneficiaries receiving Medicaid nursing facility services	Beneficiaries receiving Medicare skilled nursing facility services	Beneficiaries receiving Medicaid aged or disabled HCBS waiver services ^(b)
Population	1,571,920	1,087,037 ^a	560,908 ^a	373,637 ^a
Total hospitalizations	958,837	516,341	174,634	267,862
Potentially avoidable hospitalizations	382,846	240,753	73,468	68,625
Total hospitalization costs for potentially avoidable hospitalizations (in billions)	\$3.127	\$1.927	\$.738	\$.463
Potentially avoidable hospitalization rate (per 1,000 person-years)	360	338	942	250
Average length of stay for potentially avoidable hospitalizations (days)	6.7	6.6	8.4	5.5
Average Medicare hospitalization cost for potentially avoidable hospitalizations	\$7,846	\$7,661	\$9,792	\$6,415
Average Medicaid hospitalization cost for potentially avoidable hospitalizations	\$321	\$343	\$249	\$325

^a Categories are not mutually exclusive; individuals may be in more than one category at some point in 2005. However, each hospitalization is only counted once, in the category defined by the day immediately preceding hospital admission.

^b A reduced list of conditions for potentially avoidable hospitalizations of beneficiaries using Medicaid HCBS waiver services was used to reflect the appropriateness of hospitalizations for some conditions for frail elders or people with disabilities living at home.

NOTE: HCBS = home and community-based services.

The overall average hospitalization rate for all persons while in a nursing facility on Medicaid or Medicare or in the community on Medicaid aged/disabled waivers was 360 hospitalizations per 1,000 person-years. However, this figure obscures wide variation among the three categories shown: 338 for hospitalizations from Medicaid-covered nursing facility stays, 250 for persons in the community on aged or disabled HCBS waivers, and 942 for persons in Medicare-covered skilled nursing facility stays. The average length of hospital stay was 6.7 days, although the average for stays coming from Medicare-covered skilled nursing facility stays was 1.7 days longer. Similarly, the average cost of a potentially avoidable hospital stay to Medicare and to Medicaid was \$7,846, and \$321, respectively, although the average Medicare costs for hospitalizations coming from Medicare-covered skilled nursing facility stays was almost \$2,000 higher.

5.2 Potentially Avoidable Hospitalization Rates and Length by Setting

Table 22 breaks out the data regarding number of potentially avoidable hospitalizations, rates, and average length of stay by race/ethnicity for the United States, while **Tables 23(a–e)**, **24(a–e)**, and **25(a–e)** provide detailed information by setting, state, and race/ethnicity. As shown in these tables, both hospitalization rates and length of stay varied by race/ethnicity. Dually eligible beneficiaries who are Hispanic had the highest rates of potentially avoidable hospitalizations from nursing facilities (both Medicaid and Medicare covered stays) and the longest average length of stay for those hospitalizations. Whites had the lowest rates of potentially avoidable hospitalizations from those settings, and the shortest average length of stay from every setting. Dually eligible beneficiaries in the “other race” category had the lowest rate of potentially avoidable hospitalizations from HCBS waiver stays, while blacks enrolled in HCBS waivers had both the highest rate of potentially avoidable hospitalizations from that setting and the longest average length of stay.

Table 22
Summary table: Potentially avoidable hospitalizations of dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers by race/ethnicity in U.S., 2005

Setting	Number with nursing facility, skilled nursing facility, and HCBS stays	Potentially avoidable hospitalizations	Hospitalization rate (per 1,000 person years)	Average length of stay
All settings				
All	1,571,920	382,846	360	6.7
White	1,225,398	289,389	347	6.4
Black	262,538	73,393	411	7.6
Hispanic	39,394	10,358	420	8.0
Other	44,590	9,706	355	7.6
Medicaid-covered nursing facility stays				
All	1,087,037	240,753	338	6.6
White	883,091	188,841	325	6.3
Black	156,832	40,645	400	7.2
Hispanic	20,383	5,397	431	8.1
Other	26,731	5,770	346	7.4
Medicare-covered skilled nursing facility stays				
All	560,908	73,468	942	8.4
White	427,936	53,925	904	7.9
Black	98,573	14,781	1,056	9.7
Hispanic	16,716	2,491	1,159	10.1
Other	17,683	2,271	1,032	9.5
HCBS waiver stays				
All	373,637	68,625	250	5.5
White	264,712	46,523	241	5.3
Black	84,357	17,967	285	5.9
Hispanic	12,996	2,470	247	5.7
Other	11,572	1,665	197	5.7

HCBS = home and community-based services.

Table 23a
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: All

Location	Hospitalization rate (per 1,000 person-years)	Number with relevant stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	360	1,571,920	382,846	6.7
Louisiana	591	30,123	12,231	9.0
New Jersey	535	36,387	12,443	7.9
Kentucky	483	30,148	10,057	5.9
District of Columbia	480	3,520	1,118	8.9
Tennessee	472	38,424	11,008	6.4
Mississippi	455	29,215	9,133	6.8
West Virginia	424	12,211	3,435	5.9
Arkansas	421	24,556	7,495	6.1
Texas	409	114,752	33,920	7.5
Oklahoma	395	31,091	8,034	6.7
California	390	94,856	20,980	8.2
Maryland	389	21,081	5,235	6.3
Florida	388	83,463	20,217	7.2
Georgia	383	46,442	12,312	5.9
Illinois	372	94,685	26,292	6.0
New York	366	107,652	25,652	8.5
Pennsylvania	359	70,782	17,497	6.5
Alabama	357	27,221	6,907	6.5
Delaware	357	4,485	1,160	6.9
Rhode Island	350	6,348	1,517	6.8
Virginia	349	35,023	8,285	6.4
Missouri	348	52,844	13,496	6.1
North Carolina	345	43,041	9,426	6.6
Ohio	345	94,904	23,299	5.9
Indiana	342	39,721	9,339	6.2
South Carolina	342	28,331	6,940	6.9
Massachusetts	340	43,314	9,232	6.7
Michigan	317	51,328	10,916	6.4

(continued)

Table 23a (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: All

Location	Hospitalization rate (per 1,000 person-years)	Number with relevant stays	Potentially avoidable hospitalizations	Average length of stay
Kansas	303	25,672	5,892	5.8
Nevada	285	5,146	1,003	9.0
Nebraska	284	13,275	2,636	5.6
Washington	283	16,955	2,570	5.7
Connecticut	265	33,056	6,597	6.3
North Dakota	264	5,212	942	4.9
Iowa	257	27,458	5,254	5.0
Wyoming	255	3,362	636	4.8
South Dakota	254	6,384	1,153	4.9
New Mexico	248	7,757	1,328	5.8
Wisconsin	227	33,053	4,895	5.5
Colorado	207	18,965	2,920	5.2
Minnesota	206	23,407	2,598	4.9
New Hampshire	199	8,650	1,265	5.5
Montana	184	7,386	1,003	4.8
Utah	182	5,664	594	5.6
Idaho	167	9,761	1,229	4.8
Alaska	166	2,261	269	5.7
Vermont	161	3,983	406	4.8
Oregon	160	14,292	1,607	4.5
Hawaii	158	4,273	473	9.2

HCBS = home and community-based services.

Table 23b
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: White

Location	Hospitalization rate (per 1,000 person-years)	Number with relevant stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	347	1,225,398	289,389	6.4
Louisiana	613	19,486	8,380	8.2
New Jersey	498	27,872	9,130	7.6
Kentucky	489	27,319	9,199	5.9
Tennessee	477	31,379	9,065	6.0
Mississippi	475	16,993	5,504	6.6
Arkansas	429	19,317	5,997	6.0
West Virginia	424	11,634	3,283	5.9
Texas	409	84,285	24,960	7.2
Oklahoma	396	25,002	6,468	6.7
District of Columbia	390	327	88	6.7
Georgia	390	30,204	8,201	5.5
Florida	373	61,083	14,292	6.8
Alabama	364	18,970	4,935	6.4
Illinois	361	67,237	18,047	5.8
California	359	64,734	13,533	7.8
Maryland	356	13,039	3,048	6.2
Delaware	351	3,178	816	6.9
New York	350	83,787	19,464	8.0
Virginia	350	21,870	5,137	6.0
Rhode Island	349	5,753	1,378	6.8
Missouri	340	44,839	11,177	6.0
South Carolina	339	16,586	3,960	6.5
Ohio	336	78,148	18,657	5.7
Indiana	335	35,357	8,174	6.1
Massachusetts	335	38,908	8,236	6.7
Pennsylvania	335	60,745	13,945	6.3
North Carolina	332	27,178	5,624	6.2
Kansas	301	22,594	5,152	5.7

(continued)

Table 23b (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: White

Location	Hospitalization rate (per 1,000 person-years)	Number with relevant stays	Potentially avoidable hospitalizations	Average length of stay
Michigan	291	42,064	8,249	6.1
Nebraska	285	12,514	2,502	5.6
Washington	277	15,157	2,262	5.6
Nevada	275	4,274	811	8.9
Connecticut	265	27,707	5,510	6.3
North Dakota	260	4,988	891	4.9
Wyoming	260	3,142	605	4.8
Iowa	258	26,394	5,065	5.0
South Dakota	246	5,945	1,054	4.9
New Mexico	238	5,719	945	5.8
Wisconsin	224	31,664	4,643	5.4
Colorado	207	16,472	2,537	5.1
Minnesota	206	21,722	2,402	4.9
New Hampshire	199	8,540	1,250	5.5
Utah	178	5,279	542	5.6
Montana	176	6,793	891	4.7
Hawaii	174	1,110	134	9.9
Alaska	169	1,542	188	5.2
Idaho	167	9,238	1,161	4.9
Vermont	161	3,936	401	4.8
Oregon	159	13,374	1,496	4.5

HCBS = home and community-based services.

Table 23c
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: Black

Location	Hospitalization rate (per 1,000 person-years)	Number with relevant stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	411	262,538	73,393	7.6
New Jersey	668	6,514	2,614	8.7
South Dakota	656	16	7	4.1
North Dakota	592	10	2	3.5
Louisiana	548	10,303	3,731	10.7
Pennsylvania	519	8,589	3,157	7.2
District of Columbia	488	3,122	1,002	9.2
California	473	11,724	3,187	9.1
Maryland	459	7,328	2,054	6.6
Michigan	451	8,335	2,451	7.4
Tennessee	449	6,752	1,864	8.1
Kentucky	432	2,661	815	6.7
Mississippi	425	12,017	3,557	7.2
West Virginia	420	480	130	6.9
Illinois	416	23,151	7,257	6.5
New York	415	16,514	4,310	9.8
Texas	413	16,925	4,997	9.0
Indiana	407	3,965	1,083	7.0
Florida	406	15,006	3,899	7.9
Massachusetts	405	2,445	574	7.1
Missouri	400	7,485	2,192	6.8
Ohio	396	15,464	4,378	6.4
Arkansas	392	4,947	1,422	6.7
Washington	368	596	114	5.3
Georgia	367	15,788	3,989	6.5
North Carolina	367	14,921	3,571	7.1
Delaware	362	1,205	311	6.8
South Carolina	349	11,563	2,953	7.3
Virginia	349	12,284	2,979	7.1

(continued)

Table 23c (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: Black

Location	Hospitalization rate (per 1,000 person-years)	Number of duals with relevant stays	Potentially avoidable hospitalizations	Average length of stay
Alabama	341	8,083	1,937	6.9
Nevada	334	453	105	10.5
Oklahoma	334	3,110	704	7.2
Kansas	322	2,258	557	6.9
Rhode Island	315	349	72	6.9
Nebraska	297	446	87	6.6
Wisconsin	294	851	153	8.0
Connecticut	257	3,651	730	6.1
Utah	256	56	7	3.4
Vermont	233	13	2	11.0
Iowa	228	690	120	5.1
Colorado	221	849	137	5.8
Minnesota	196	852	96	3.9
Montana	194	21	3	5.0
Idaho	185	46	6	5.0
New Mexico	181	184	24	5.2
Oregon	169	306	36	3.9
New Hampshire	134	46	4	13.8
Alaska	131	103	10	5.3
Wyoming	121	20	2	2.0
Hawaii	39	41	1	6.0

HCBS = home and community-based services.

Table 23d
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: Hispanic

Location	Hospitalization rate (per 1,000 person-years)	Number with relevant stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	420	39,394	10,358	8.0
New Jersey	759	1,116	421	8.2
Mississippi	721	24	11	9.1
Tennessee	656	30	9	6.0
Louisiana	649	96	37	10.4
Oklahoma	616	162	62	5.3
Delaware	587	47	17	5.4
District of Columbia	512	26	9	5.3
Florida	510	6,047	1,736	8.6
Indiana	495	93	31	7.8
New York	483	3,585	958	9.7
Rhode Island	473	112	35	8.4
California	462	7,469	1,735	9.3
Pennsylvania	462	478	160	7.7
Washington	442	173	39	7.7
Massachusetts	411	645	138	6.0
Iowa	410	62	17	4.5
Texas	410	11,621	3,417	7.5
Illinois	385	1,717	486	6.3
Missouri	376	95	24	7.0
Georgia	373	106	27	7.1
Ohio	352	322	84	6.0
Michigan	348	239	57	6.9
Hawaii	335	54	10	6.5
North Carolina	313	65	13	5.5
Minnesota	291	88	15	5.6
Connecticut	283	1,075	245	6.4
Virginia	282	182	32	6.3

(continued)

Table 23d (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from all nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: Hispanic

Location	Hospitalization rate (per 1,000 person-years)	Number with relevant stays	Potentially avoidable hospitalizations	Average length of stay
Maryland	277	143	21	5.3
Arkansas	264	38	6	4.7
Nevada	261	166	26	9.7
Alabama	252	16	3	6.0
Nebraska	247	76	12	3.8
New Mexico	228	1,097	170	5.6
Wisconsin	224	84	10	7.3
Kansas	222	264	42	4.4
Utah	203	118	14	3.8
Wyoming	195	64	9	4.9
Kentucky	192	12	2	17.5
Colorado	191	1,169	170	5.4
Idaho	170	179	24	4.1
Oregon	163	136	16	4.2
Alaska	109	22	2	3.5
Montana	108	26	2	12.0
South Carolina	59	31	1	7.0

HCBS = home and community-based services.

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 23e
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: Other

Location	Hospitalization rate (per 1,000 person-years)	Number with relevant stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	355	44,590	9,706	7.6
District of Columbia	640	45	19	8.3
New Jersey	600	885	278	8.1
Louisiana	552	238	83	11.1
Mississippi	515	181	61	6.1
California	453	10,929	2,525	8.5
Tennessee	445	263	70	5.3
Oklahoma	444	2,817	800	6.7
New York	436	3,766	920	9.7
Delaware	431	55	16	9.0
Texas	418	1,921	546	8.7
Georgia	414	344	95	6.1
Arkansas	396	254	70	5.3
Kentucky	395	156	41	4.7
Florida	389	1,327	290	7.4
Nevada	386	253	61	7.9
Michigan	384	690	159	6.9
North Dakota	378	211	49	4.5
New Mexico	377	757	189	6.2
South Dakota	377	419	89	5.9
West Virginia	373	96	22	6.0
Rhode Island	366	134	32	5.4
North Carolina	364	877	218	7.1
Massachusetts	359	1,316	284	7.0
Maryland	353	571	112	5.9
Pennsylvania	349	970	235	7.6
Missouri	346	425	103	6.7
Wisconsin	342	454	89	6.2
Kansas	337	556	141	5.8

(continued)

Table 23e (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, by
hospitalization rate, 2005
Race/ethnicity: Other

Location	Hospitalization rate (per 1,000 person-years)	Number with relevant stays	Potentially avoidable hospitalizations	Average length of stay
Virginia	324	687	137	7.1
Washington	306	1,029	155	6.3
Alabama	291	152	32	6.3
Montana	288	546	107	5.1
New Hampshire	273	54	11	4.5
Ohio	266	970	180	5.9
Illinois	261	2,580	502	6.6
Utah	254	211	31	6.3
Connecticut	249	623	112	6.4
Indiana	246	306	51	6.2
South Carolina	236	151	26	8.6
Iowa	228	312	52	5.6
Nebraska	220	239	35	5.8
Colorado	208	475	76	5.0
Wyoming	199	136	20	3.7
Minnesota	197	745	85	5.0
Vermont	189	28	3	7.7
Oregon	180	476	59	4.5
Alaska	169	594	69	7.2
Idaho	168	298	38	4.6
Hawaii	152	3,068	328	9.0

HCBS = home and community-based services.

Table 24a
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: All

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	338	1,087,037	240,753	6.6
Louisiana	551	24,733	8,889	8.6
Mississippi	487	16,504	5,356	6.9
Kentucky	463	20,016	5,962	5.9
Arkansas	447	15,744	4,824	6.0
New Jersey	446	31,274	9,495	7.4
Oklahoma	444	17,020	4,598	6.8
District of Columbia	443	2,473	767	8.5
Texas	414	79,440	21,631	7.5
Tennessee	409	30,350	8,382	6.0
Illinois	395	55,972	15,122	6.0
West Virginia	393	8,844	2,403	5.7
Georgia	378	32,056	8,036	5.7
Missouri	365	31,332	7,712	6.2
Maryland	352	16,087	3,565	6.2
Delaware	350	3,223	761	6.8
Florida	345	61,614	13,377	6.9
Kansas	344	14,622	3,407	5.8
Alabama	337	19,899	4,607	6.4
California	336	66,083	13,781	7.8
South Carolina	325	15,180	3,340	6.7
Rhode Island	320	4,190	844	6.2
Pennsylvania	318	52,905	11,074	6.3
North Carolina	312	25,497	5,035	6.5
Ohio	309	64,307	12,862	5.9
Virginia	308	22,094	4,458	6.2
Indiana	306	34,188	7,129	6.0
New York	293	89,014	17,615	8.1
Massachusetts	290	32,122	5,929	6.3

(continued)

Table 24a (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: All

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
Nebraska	287	9,373	1,768	5.4
Michigan	280	39,509	7,313	6.0
Iowa	268	17,753	3,273	5.0
Nevada	264	3,231	523	9.3
Minnesota	262	10,514	967	5.1
South Dakota	255	5,196	933	4.8
Wyoming	247	2,081	349	5.0
North Dakota	242	4,444	746	4.8
New Mexico	236	5,219	823	5.6
Washington	228	13,607	1,849	5.6
Colorado	215	9,392	1,279	5.2
Montana	206	4,554	630	4.8
Connecticut	202	21,439	2,834	6.0
Wisconsin	197	29,825	3,999	5.2
Idaho	185	3,851	443	5.1
Oregon	180	3,993	405	4.8
New Hampshire	162	6,244	714	5.1
Utah	156	4,304	393	5.4
Vermont	147	2,547	261	4.9
Alaska	143	604	54	4.4
Hawaii	133	2,574	236	9.4

Table 24b
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: White

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	325	883,091	188,941	6.3
Louisiana	564	16,945	6,326	8.0
Mississippi	490	10,862	3,542	6.6
Kentucky	469	18,154	5,454	5.9
Oklahoma	445	14,222	3,859	6.7
Arkansas	444	12,996	3,955	5.9
New Jersey	419	24,731	7,095	7.2
Tennessee	414	24,978	6,986	5.7
Texas	408	61,862	16,686	7.1
West Virginia	392	8,435	2,289	5.7
Georgia	383	21,846	5,560	5.4
Illinois	374	45,340	11,787	5.8
District of Columbia	366	282	74	6.0
Missouri	353	27,300	6,532	6.0
Delaware	352	2,362	562	6.9
Kansas	341	13,424	3,113	5.7
Alabama	337	14,987	3,472	6.3
Florida	331	47,525	9,887	6.6
Maryland	326	10,346	2,161	5.9
Rhode Island	315	3,880	772	6.2
South Carolina	313	10,123	2,140	6.3
California	309	47,178	9,224	7.4
Virginia	306	15,199	3,070	5.9
Indiana	301	30,689	6,312	5.9
Ohio	300	55,004	10,765	5.7
Pennsylvania	296	46,627	9,084	6.1
North Carolina	293	17,021	3,146	6.0
Nebraska	287	8,868	1,677	5.5
Massachusetts	285	29,789	5,429	6.3

(continued)

Table 24b (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: White

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
New York	280	69,896	13,364	7.7
Iowa	268	17,319	3,189	5.0
Minnesota	262	9,857	895	5.1
Michigan	257	33,297	5,698	5.8
Wyoming	252	1,971	338	5.0
Nevada	249	2,735	420	9.3
South Dakota	246	4,868	846	4.8
North Dakota	239	4,285	713	4.8
Washington	224	12,265	1,636	5.6
New Mexico	223	3,999	596	5.6
Colorado	214	8,407	1,143	5.1
Connecticut	202	19,016	2,521	5.9
Montana	197	4,235	564	4.7
Wisconsin	195	28,657	3,823	5.1
Idaho	186	3,708	430	5.1
Oregon	180	3,775	383	4.7
New Hampshire	163	6,188	709	5.1
Alaska	153	413	39	4.6
Utah	153	4,044	362	5.4
Vermont	147	2,516	258	4.8
Hawaii	123	665	55	11.1

Table 24c
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Black

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	400	156,832	40,645	7.7
South Dakota	673	13	6	4.2
New Jersey	550	5,167	1,897	8.2
Louisiana	519	7,525	2,470	10.3
Illinois	510	8,908	2,872	6.8
Pennsylvania	494	5,449	1,785	7.1
Mississippi	481	5,508	1,771	7.6
Arkansas	462	2,570	822	6.8
District of Columbia	451	2,138	674	8.8
Missouri	447	3,752	1,109	7.1
Kentucky	418	1,747	482	6.6
California	416	7,802	1,937	8.6
West Virginia	416	336	94	6.0
Texas	415	10,722	2,914	9.1
Michigan	413	5,607	1,479	7.1
Maryland	408	5,296	1,321	6.7
Nevada	402	262	61	10.1
Kansas	393	849	214	7.3
Tennessee	386	5,142	1,339	7.4
Rhode Island	381	178	39	7.8
Ohio	376	8,540	1,961	6.7
Oklahoma	371	1,358	311	8.2
Georgia	368	9,915	2,404	6.3
Florida	361	10,207	2,385	7.5
Massachusetts	359	1,382	296	6.8
Indiana	357	3,177	760	7.0
South Carolina	352	4,966	1,186	7.5
North Carolina	349	8,058	1,801	7.2

(continued)

Table 24c (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Black

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
Alabama	338	4,794	1,114	6.9
New York	337	13,589	3,041	9.2
Delaware	326	793	175	6.9
Virginia	310	6,453	1,299	7.0
Washington	306	449	82	5.1
Montana	299	11	3	5.0
Iowa	277	254	47	5.3
Nebraska	270	327	57	5.3
Wisconsin	239	721	113	7.9
Minnesota	233	332	30	4.4
Alaska	227	21	3	3.0
Idaho	204	16	2	5.5
Colorado	196	383	45	5.4
Connecticut	193	1,788	218	6.4
Utah	152	38	3	4.0
Oregon	134	90	8	5.1
Vermont	125	10	1	20.0
New Mexico	120	124	10	6.4
Wyoming	80	15	1	2.0
Hawaii	76	20	1	6.0

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 24d
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Hispanic

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	431	20,383	5,397	8.1
Delaware	742	33	14	5.2
Louisiana	701	66	27	7.7
New Jersey	648	744	311	8.0
Iowa	607	30	9	5.3
Arkansas	589	20	6	4.7
Rhode Island	587	57	20	6.7
Florida	515	3,020	921	8.1
Minnesota	497	28	7	5.1
Oregon	494	18	4	4.5
Texas	471	5,592	1,660	7.9
Illinois	468	658	202	6.3
Oklahoma	461	70	22	5.1
District of Columbia	446	19	6	6.3
Nebraska	446	29	8	3.6
Indiana	430	70	21	8.8
Pennsylvania	425	245	68	11.0
California	410	4,149	988	9.1
Missouri	406	48	12	9.5
Washington	402	134	31	7.6
Mississippi	389	14	3	7.3
Ohio	381	182	45	6.0
New York	369	2,696	627	9.1
Virginia	358	85	19	6.6
Massachusetts	340	267	54	6.5
Michigan	310	141	29	6.3
Georgia	274	59	11	7.0
Alabama	263	10	2	8.0

(continued)

Table 24d (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Hispanic

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
Connecticut	260	331	52	7.6
Colorado	259	370	56	6.4
Tennessee	259	21	3	5.0
Hawaii	256	32	4	8.5
New Mexico	238	591	94	5.4
Nevada	218	87	12	9.3
North Carolina	215	39	5	6.0
Maryland	197	77	9	4.4
Kansas	189	98	12	4.3
Wyoming	185	32	4	5.3
Utah	173	68	8	4.0
Idaho	142	35	3	3.0
Wisconsin	99	69	4	5.0
South Carolina	—	12	0	—
Montana	—	14	0	—

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 24e
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Other

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
U.S.	346	26,731	5,770	7.4
District of Columbia	630	34	13	9.2
Louisiana	542	197	66	10.2
Mississippi	499	120	40	6.0
Oklahoma	497	1,370	406	7.0
New Jersey	471	632	192	7.6
Texas	457	1,264	371	8.6
Delaware	455	35	10	7.3
Kansas	415	251	68	5.9
West Virginia	415	73	20	6.2
California	397	6,954	1,632	8.0
Tennessee	396	209	54	5.2
South Dakota	395	312	78	5.3
Georgia	391	236	61	6.6
Arkansas	389	158	41	4.8
Missouri	388	232	59	7.6
Illinois	379	1,066	261	6.2
New Mexico	372	505	123	5.6
Michigan	368	464	107	5.5
Kentucky	359	109	25	4.8
Massachusetts	357	684	150	7.0
Montana	357	294	63	5.1
Nevada	356	147	30	8.1
Florida	352	862	184	7.5
Pennsylvania	350	584	137	6.9
North Carolina	348	379	83	7.3
Maryland	346	368	74	5.8
Virginia	328	357	70	6.7
New York	323	2,833	583	8.9

(continued)

Table 24e (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicaid-covered nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Other

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicaid nursing facility stays	Potentially avoidable hospitalizations	Average length of stay
North Dakota	323	151	31	5.2
Rhode Island	279	75	13	3.2
Iowa	275	150	28	4.3
Nebraska	265	149	26	5.9
Alabama	263	108	19	7.6
New Hampshire	262	27	5	3.8
Minnesota	261	297	35	6.2
Wisconsin	248	378	59	5.3
Ohio	247	581	91	5.6
South Carolina	246	79	14	6.1
Colorado	233	232	35	5.2
Utah	230	154	20	6.5
Washington	220	759	100	5.8
Connecticut	215	304	43	6.0
Indiana	208	252	36	6.2
Vermont	200	15	2	4.5
Oregon	170	110	10	8.3
Wyoming	148	63	6	4.0
Idaho	142	92	8	4.3
Hawaii	136	1,857	176	8.8
Alaska	110	169	12	4.3

Table 25a
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: All

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	942	560,908	73,468	8.4
New Jersey	1,464	17,078	2,796	9.4
Delaware	1,298	1,368	205	8.0
Louisiana	1,253	13,493	2,592	11.1
District of Columbia	1,215	1,227	181	12.3
Oklahoma	1,202	7,245	923	9.3
Illinois	1,196	25,791	3,957	7.7
Maryland	1,154	7,936	1,011	7.5
Kentucky	1,126	10,834	1,647	7.0
Mississippi	1,102	10,517	1,740	8.1
Arkansas	1,075	7,380	955	8.0
Rhode Island	1,063	2,206	298	9.4
Missouri	1,048	15,508	1,920	7.8
Pennsylvania	1,025	23,655	2,906	7.5
Tennessee	1,018	19,134	2,539	7.5
Ohio	1,011	27,987	3,273	7.2
California	1,008	45,907	5,717	9.9
Texas	997	39,699	5,677	9.7
Michigan	984	17,862	2,166	8.2
Florida	973	36,534	4,739	8.4
Georgia	970	15,139	1,909	7.1
Kansas	928	6,126	607	8.5
South Carolina	908	9,436	1,166	8.1
West Virginia	895	4,430	554	7.0
New Mexico	883	2,036	217	8.2
Alabama	869	10,135	1,377	7.5
Indiana	828	14,407	1,676	7.5
Oregon	826	2,173	167	5.6
Minnesota	815	5,262	440	6.3

(continued)

Table 25a (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: All

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
New York	814	49,464	8,033	9.3
Nevada	793	1,565	157	13.4
Massachusetts	782	18,674	2,277	8.0
North Carolina	758	17,650	2,018	8.0
Washington	756	7,307	721	5.9
Virginia	754	13,073	1,660	7.8
Wisconsin	725	10,580	896	7.0
Connecticut	704	12,915	2,169	7.2
South Dakota	687	1,817	137	6.1
Iowa	684	6,352	464	6.4
Colorado	668	4,311	313	6.6
Nebraska	646	4,284	431	7.2
Wyoming	634	785	60	5.6
New Hampshire	624	2,234	160	7.4
North Dakota	615	1,730	147	5.5
Utah	574	1,814	124	6.9
Montana	556	1,672	91	6.2
Vermont	553	1,000	59	6.0
Idaho	530	1,942	136	7.0
Hawaii	478	980	54	12.9
Alaska	195	254	6	4.5

Table 25b
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/Ethnicity: White

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	904	427,936	53,925	7.9
New Jersey	1,435	12,127	1,916	9.1
District of Columbia	1,256	85	12	11.4
Louisiana	1,231	8,781	1,721	9.7
Oklahoma	1,193	5,897	739	9.3
Delaware	1,174	935	128	7.9
Illinois	1,156	19,066	2,707	7.1
Maryland	1,135	4,349	511	7.6
Kentucky	1,131	9,770	1,484	6.9
Rhode Island	1,107	1,988	283	9.3
Mississippi	1,085	6,402	1,079	7.6
Arkansas	1,063	5,858	766	7.8
Missouri	1,023	13,177	1,565	7.7
Tennessee	1,020	15,640	2,046	7.0
Ohio	987	22,737	2,572	7.0
Texas	973	29,082	4,065	9.0
Pennsylvania	965	20,401	2,335	7.2
Georgia	963	9,807	1,224	6.5
California	949	29,497	3,413	9.4
Michigan	930	13,970	1,551	7.8
Florida	916	26,070	3,171	7.8
Kansas	912	5,458	525	8.0
West Virginia	907	4,202	529	6.9
South Carolina	869	5,878	686	7.5
Alabama	867	7,236	1,009	7.3
Indiana	812	12,593	1,425	7.4
Minnesota	811	4,873	406	6.4
Oregon	799	2,056	150	5.8
Nevada	798	1,251	123	12.5

(continued)

Table 25b (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/Ethnicity: White

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
New Mexico	790	1,423	133	8.6
New York	769	37,405	6,099	8.7
Massachusetts	762	16,560	2,019	8.0
Washington	737	6,376	626	5.8
Virginia	730	8,185	1,020	7.3
North Carolina	720	11,404	1,229	7.6
Wisconsin	705	9,978	820	6.8
South Dakota	701	1,622	125	5.8
Connecticut	698	10,979	1,839	7.2
Colorado	687	3,762	283	6.5
Iowa	681	6,095	441	6.3
Nebraska	645	3,994	406	7.0
New Hampshire	623	2,205	158	7.4
Wyoming	620	740	55	5.6
North Dakota	619	1,614	138	5.7
Utah	578	1,654	113	7.0
Vermont	560	985	59	6.0
Montana	542	1,516	82	5.8
Idaho	516	1,842	126	7.0
Hawaii	362	245	9	25.2
Alaska	202	166	4	4.3

Table 25c
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Black

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	1,056	98,573	14,781	9.7
Idaho	1,977	14	3	5.7
Delaware	1,620	389	71	7.8
New Jersey	1,548	3,710	694	10.2
New Mexico	1,490	48	9	4.1
Pennsylvania	1,384	2,844	506	8.5
Louisiana	1,304	4,552	847	14.0
Illinois	1,271	5,678	1,054	9.0
District of Columbia	1,214	1,116	165	12.6
Maryland	1,190	3,259	470	7.4
Missouri	1,180	2,163	336	8.1
Michigan	1,164	3,517	566	9.1
California	1,144	6,090	953	11.3
Arkansas	1,136	1,430	179	8.6
Oklahoma	1,135	624	81	8.5
Ohio	1,117	4,904	660	8.0
Mississippi	1,114	4,046	639	8.9
Kentucky	1,090	1,016	159	8.1
Texas	1,076	6,086	969	12.0
Kansas	1,063	495	66	11.5
Tennessee	1,006	3,355	472	9.8
Florida	1,004	6,793	942	9.4
South Carolina	980	3,500	477	8.9
Georgia	977	5,181	662	8.2
Oregon	977	32	4	3.0
New York	936	8,055	1,269	11.1
Massachusetts	935	1,174	145	8.9
Indiana	928	1,669	232	7.9

(continued)

Table 25c (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Black

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
Alabama	879	2,837	362	8.3
Wisconsin	868	370	40	8.6
Minnesota	838	208	17	5.4
North Carolina	825	5,963	754	8.6
Virginia	794	4,584	602	8.5
West Virginia	788	199	25	10.6
Washington	784	333	32	5.7
Iowa	776	170	17	5.5
Nebraska	764	186	19	11.2
Connecticut	738	1,384	248	6.9
Nevada	603	160	15	22.4
Utah	588	25	2	4.5
Rhode Island	432	139	7	7.9
Colorado	403	219	10	3.5
Alaska	—	12	0	—
New Hampshire	—	12	0	—

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 25d
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Hispanic

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	1,159	16,716	2,491	10.1
Tennessee	2,801	18	6	6.5
Mississippi	2,798	14	7	10.7
Minnesota	1,971	21	5	6.6
Idaho	1,821	33	5	7.2
Georgia	1,654	38	7	5.3
Oklahoma	1,442	48	6	8.2
Florida	1,412	3,069	559	10.3
New Jersey	1,406	736	103	9.1
Wisconsin	1,362	39	6	8.8
Illinois	1,360	477	83	8.9
Pennsylvania	1,349	133	23	7.8
Michigan	1,202	82	13	8.7
New York	1,169	1,968	331	10.9
California	1,146	4,202	579	10.7
Massachusetts	1,146	323	42	5.6
Wyoming	1,135	16	3	6.0
Louisiana	1,077	54	8	21.0
Oregon	1,074	11	2	6.5
Texas	1,067	3,818	555	10.2
Indiana	1,011	42	7	6.9
Delaware	979	21	2	5.0
Nevada	963	63	7	12.9
Kansas	908	50	5	6.6
New Mexico	906	298	29	8.0
Maryland	855	68	5	7.6
Washington	716	81	8	8.0
Virginia	710	61	6	8.0

(continued)

Table 25d (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Hispanic

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
Connecticut	692	329	45	5.7
Hawaii	643	20	1	4.0
Missouri	642	31	2	5.5
North Carolina	602	30	4	6.8
Utah	563	47	3	4.3
Colorado	541	239	12	8.8
Rhode Island	503	34	2	32.5
Iowa	452	19	1	10.0
Ohio	450	97	5	5.4
Nebraska	382	30	2	4.0
Arkansas	—	11	0	—
District of Columbia	—	11	0	—

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 25e
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Other

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	1,032	17,683	2,271	9.5
Mississippi	1,839	55	15	7.0
District of Columbia	1,724	15	4	5.8
New Jersey	1,548	505	83	9.2
Illinois	1,491	570	113	8.8
Oklahoma	1,333	676	97	9.8
Wisconsin	1,330	193	30	7.8
Delaware	1,305	23	4	16.0
Rhode Island	1,304	45	6	9.2
Oregon	1,284	74	11	3.8
Pennsylvania	1,268	277	42	8.5
Ohio	1,243	249	36	6.6
Louisiana	1,195	106	16	14.7
Missouri	1,195	137	17	7.8
New Mexico	1,174	267	46	8.3
New Hampshire	1,150	13	2	6.5
New York	1,099	2,036	334	11.0
Georgia	1,054	113	16	5.1
California	1,049	6,118	772	9.9
Washington	1,043	517	55	7.3
Arkansas	1,028	81	10	9.1
Michigan	1,026	293	36	12.6
Nevada	1,020	91	12	12.4
Kansas	986	123	11	10.9
Maryland	979	260	25	6.2
Massachusetts	971	617	71	7.7
Tennessee	909	121	15	5.3
Indiana	908	103	12	6.9
Florida	906	602	67	8.8

(continued)

Table 25e (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
with Medicare-covered skilled nursing facility stays, by hospitalization rate, 2005
Race/ethnicity: Other

Location	Hospitalization rate (per 1,000 person-years)	Number with Medicare skilled nursing facility stays	Potentially avoidable hospitalizations	Average length of stay (days)
Texas	905	713	88	11.3
North Carolina	891	253	31	9.1
Virginia	879	243	32	9.2
Colorado	875	91	8	8.1
Connecticut	854	223	37	9.1
Kentucky	852	46	4	3.5
Minnesota	756	160	12	4.0
Iowa	733	68	5	15.0
Alabama	714	56	6	4.7
Wyoming	680	27	2	2.5
Montana	605	143	7	9.4
North Dakota	584	109	9	3.4
South Dakota	548	185	11	9.7
Hawaii	516	707	44	10.6
Utah	510	88	6	7.7
Nebraska	487	74	4	5.8
South Carolina	456	48	3	5.7
Alaska	238	74	2	5.0
Idaho	235	53	2	5.5
Vermont	—	14	0	—
West Virginia	—	28	0	—

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 26a
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: All

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	250	373,637	68,625	5.5
New Jersey	2,423	1,178	152	7.7
District of Columbia	379	722	170	7.1
Kentucky	377	8,757	2,448	5.2
West Virginia	348	2,363	478	5.9
Pennsylvania	317	16,503	3,517	6.2
Ohio	315	30,916	7,164	5.2
Virginia	307	9,985	2,167	5.9
Louisiana	301	3,088	750	6.3
Arkansas	281	8,196	1,716	5.3
North Carolina	279	11,716	2,373	5.7
South Carolina	279	11,192	2,434	6.5
Oklahoma	272	14,073	2,513	5.6
Maryland	271	3,236	659	5.5
Massachusetts	271	5,549	1,026	6.4
Mississippi	271	9,862	2,037	5.6
Indiana	270	2,738	534	4.9
Texas	266	32,445	6,612	5.7
Georgia	265	12,028	2,367	5.4
Rhode Island	264	1,973	375	6.0
Tennessee	253	451	87	8.0
Florida	252	11,961	2,101	6.1
Illinois	248	38,112	7,213	5.2
Missouri	245	20,343	3,864	5.2
Nevada	241	1,791	323	6.4
Michigan	236	8,099	1,437	5.5
Wyoming	231	1,294	227	4.2

(continued)

Table 26a (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: All

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
New Hampshire	228	2,249	391	5.4
Alabama	226	5,509	923	5.6
Kansas	212	11,601	1,878	5.0
Delaware	211	1,184	194	5.7
California	209	9,493	1,482	5.6
Connecticut	204	10,134	1,594	5.5
Iowa	201	10,148	1,517	4.6
North Dakota	197	361	49	3.8
Nebraska	177	3,515	437	4.9
New Mexico	177	2,172	288	4.7
Alaska	173	1,624	209	6.1
Colorado	172	10,223	1,328	4.8
Hawaii	166	1,435	183	7.9
Utah	145	739	77	4.1
Minnesota	142	12,878	1,191	4.1
Idaho	139	6,194	650	4.2
Oregon	137	10,759	1,035	4.2
Vermont	133	1,158	86	4.0
Montana	126	2,681	282	4.3
South Dakota	121	980	83	4.3
Washington	—	16	0	—

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 26b
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: White

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	241	264,712	46,523	5.3
New Jersey	2,636	929	119	7.3
Kentucky	386	7,902	2,261	5.2
West Virginia	354	2,259	465	5.9
Virginia	323	4,681	1,047	5.3
Louisiana	312	1,323	333	6.3
Ohio	311	23,370	5,320	5.1
Pennsylvania	294	12,670	2,526	6.0
Arkansas	293	5,908	1,276	5.3
South Carolina	281	5,245	1,134	6.4
North Carolina	276	6,348	1,249	5.4
Georgia	272	7,030	1,417	5.1
Massachusetts	270	4,291	788	6.6
Tennessee	267	168	33	4.6
Oklahoma	265	10,774	1,870	5.6
Mississippi	263	4,461	883	5.5
Texas	263	21,040	4,209	5.6
Indiana	262	2,307	437	4.9
Rhode Island	261	1,714	323	6.0
Maryland	254	1,948	376	5.9
Florida	251	7,140	1,234	5.8
Nevada	243	1,479	268	6.7
Missouri	239	16,548	3,080	5.1
Wyoming	236	1,185	212	4.3
Hawaii	235	380	70	7.0
New Hampshire	228	2,199	383	5.3
Illinois	220	21,397	3,553	4.9
Michigan	219	6,096	1,000	5.3

(continued)

Table 26b (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: White

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
Alabama	218	2,801	454	5.3
California	210	5,762	896	5.4
Kansas	205	9,653	1,514	4.9
Connecticut	204	7,460	1,150	5.5
Delaware	204	797	126	5.8
Iowa	203	9,525	1,435	4.6
New Mexico	191	1,524	216	4.8
Nebraska	180	3,322	419	4.9
North Dakota	174	332	40	4.0
Alaska	173	1,113	145	5.4
Colorado	171	8,643	1,111	4.8
District of Columbia	142	23	2	1.5
Minnesota	142	11,870	1,101	4.2
Idaho	138	5,804	605	4.2
Utah	138	678	67	4.3
Oregon	136	10,045	963	4.2
Vermont	131	1,147	84	3.9
South Dakota	125	954	83	4.3
Montana	120	2,445	245	4.3
Washington	—	14	0	—

HCBS = home and community-based services.

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 26c
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: Black

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	285	84,357	17,967	5.9
New Jersey	1,613	196	23	9.8
Pennsylvania	412	3,230	866	6.7
District of Columbia	384	685	163	7.3
Ohio	334	7,013	1,757	5.5
New Hampshire	329	19	4	13.8
Indiana	322	390	91	4.8
Maryland	310	1,158	263	4.9
Illinois	303	14,288	3,331	5.6
Massachusetts	303	641	133	5.5
Virginia	301	4,964	1,078	6.5
Louisiana	296	1,735	414	6.3
Kentucky	295	808	174	5.8
Michigan	295	1,813	406	6.1
North Carolina	279	4,926	1,016	5.9
South Carolina	279	5,865	1,290	6.6
Mississippi	278	5,351	1,147	5.7
Florida	277	2,868	572	6.7
Missouri	275	3,581	747	5.7
Texas	266	5,509	1,114	6.1
Oklahoma	260	1,788	312	5.8
Georgia	253	4,872	923	5.7
Arkansas	249	2,184	421	5.6
Kansas	246	1,469	277	5.5
Tennessee	246	278	53	10.2
California	238	1,649	297	5.5
Rhode Island	236	156	26	5.2
Alabama	234	2,665	461	5.9
Delaware	232	356	65	5.5

(continued)

Table 26c (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: Black

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
Colorado	225	489	82	6.2
West Virginia	212	92	11	5.9
Nevada	210	180	29	5.0
Connecticut	192	1,685	264	5.0
Nebraska	192	83	11	5.4
Iowa	167	428	56	4.9
Oregon	161	220	24	3.6
Minnesota	143	515	49	3.2
New Mexico	117	57	5	4.8
Alaska	115	79	7	6.3
Idaho	48	28	1	2.0
Hawaii	—	17	0	—

HCBS = home and community-based services.

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 26d
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: Hispanic

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	247	12,996	2,470	5.7
New Jersey	4,942	31	7	7.3
Oklahoma	696	77	34	4.9
Pennsylvania	408	245	69	4.5
Hawaii	393	17	5	5.4
Rhode Island	362	49	13	7.3
North Carolina	345	17	4	3.8
Missouri	322	37	10	4.3
Georgia	321	41	9	8.8
Ohio	312	146	34	6.0
Massachusetts	299	209	42	5.8
Maryland	289	32	7	4.9
Iowa	287	33	7	2.7
Texas	280	5,365	1,202	5.9
Illinois	262	973	201	5.2
Michigan	253	78	15	6.5
Connecticut	246	725	148	6.1
Florida	210	1,714	256	6.3
Kansas	207	169	25	4.0
California	200	1,111	168	6.1
Nevada	188	55	7	7.1
Louisiana	181	14	2	3.5
Utah	173	25	3	2.7
Colorado	157	826	102	4.4
New Mexico	147	429	47	4.7
Idaho	137	145	16	3.3
Virginia	134	81	7	4.0
Delaware	124	13	1	8.0

(continued)

Table 26d (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: Hispanic

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
Oregon	113	119	10	3.6
Alaska	109	22	2	3.5
South Carolina	100	14	1	7.0
Wyoming	91	29	2	2.5
Minnesota	86	57	3	5.0
Nebraska	78	32	2	4.0
Arkansas	—	17	0	—
Montana	—	11	0	—

HCBS = home and community-based services.

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

Table 26e
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: Other

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
U.S.	197	11,572	1,665	5.7
New Jersey	1,573	22	3	8.0
North Dakota	490	27	9	3.1
Kentucky	409	41	12	5.0
Rhode Island	358	54	13	5.8
Oklahoma	326	1,434	297	5.2
North Carolina	319	425	104	6.5
Arkansas	309	87	19	4.4
Georgia	309	85	18	5.3
Nevada	307	77	19	4.6
District of Columbia	296	10	2	7.0
West Virginia	279	12	2	4.0
Florida	261	239	39	5.1
Kansas	255	310	62	4.8
Alabama	239	38	7	4.3
Pennsylvania	225	358	56	8.7
Texas	220	531	87	6.2
Utah	213	31	5	3.6
Massachusetts	212	408	63	6.2
Wyoming	211	75	12	3.7
Missouri	206	177	27	4.1
New Hampshire	205	24	4	4.5
Virginia	203	259	35	6.0
Montana	202	219	37	4.2
Mississippi	200	43	6	4.3
South Carolina	193	68	9	13.3

(continued)

Table 26e (continued)
Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries
from aged or disabled HCBS waiver stays, by hospitalization rate, 2005
Race/ethnicity: Other

Location	Hospitalization rate (per 1,000 person-years)	Number with HCBS waiver stays	Potentially avoidable hospitalizations	Average length of stay (days)
Alaska	190	410	55	7.9
Ohio	190	387	53	5.8
Michigan	182	112	16	3.7
Idaho	173	217	28	4.7
Maryland	168	98	13	5.7
California	167	971	121	6.1
Delaware	165	18	2	3.5
Colorado	160	265	33	4.0
Iowa	159	162	19	5.2
Connecticut	155	264	32	4.0
New Mexico	152	162	20	4.4
Oregon	145	375	38	3.8
Indiana	141	33	3	4.0
Hawaii	138	1,021	108	8.6
Minnesota	135	436	38	4.3
Illinois	110	1,454	128	5.4
Nebraska	95	78	5	5.2
Louisiana	65	16	1	10.0
South Dakota	—	24	0	—

HCBS = home and community-based services.

NOTE: States with 10 or fewer observations were excluded in order to comply with Privacy Act restrictions.

5.3 Potentially Avoidable Hospitalizations by Condition

Tables 27(a-e)–30(a-e) provide breakouts by condition category for potentially avoidable hospitalizations for the full sample by setting and then separately by race or ethnicity. Overall, almost 30% (122,198) of these hospitalizations were for pneumonia. Almost 15% (62,813) of these hospitalizations were for congestive heart failure. Urinary tract infections and dehydration each accounted for over 10% (12.6% and 11.0%, respectively). Falls and trauma accounted for 8.2%, and COPD/asthma accounted for a nearly equal amount while skin ulcers/cellulitis accounted for 5.5%. Each of the remaining nine categories accounted for less than 3% of the potentially avoidable hospitalizations. Appendix D includes tables reporting state level data for the seven most common conditions associated with potentially avoidable hospitalizations, from all settings and separately for Medicare skilled nursing facilities, Medicaid-covered nursing facilities and from HCBS waivers.

Comparing the distribution of condition categories among hospitalizations from Medicaid nursing facility stays to those from Medicare skilled nursing facility stays reveals strong similarities in the distributions of conditions. In both situations, pneumonia accounted for over 30% of potentially avoidable hospitalizations. Urinary tract infections accounted for 14.2% of potentially avoidable hospitalizations from Medicaid nursing facility stays, and 11.7% from Medicare skilled nursing facility stays. Dehydration accounted for 10.3% and 12.9% of potentially avoidable hospitalizations from Medicaid nursing facility stays and Medicare skilled nursing facility stays, respectively.

However, some differences are seen between the two settings. Congestive heart failure accounted for 11.6% of potentially avoidable hospitalizations from Medicaid nursing facility stays, but 16.8% from Medicare skilled nursing facility stays. On the other hand, falls/trauma accounted for 9.4% of potentially avoidable hospitalizations from Medicaid nursing facility stays, but 5.2% from Medicare skilled nursing facility stays.

The conditions for which persons in HCBS waiver programs had potentially avoidable hospitalizations differed from those originating from nursing facility and skilled nursing facility stays. Potentially avoidable hospitalizations for congestive heart failure (20%) and pneumonia (18.6) were most common for dually eligible beneficiaries enrolled in HCBS waivers, but pneumonia was more than 10% lower than in nursing facilities or skilled nursing facilities. However, the percentage for the COPD/asthma category is almost 10 points higher for potentially avoidable hospitalizations from Medicaid HCBS waiver stays when compared to the nursing facilities and skilled nursing facilities.

The hospitalization rates for duals in Medicaid nursing facility stays (**Table 28a**) were somewhat lower than the rates for all duals included in this study combined (**Table 27a**). And the rates for duals in Medicare skilled nursing facility stays (**Table 29a**) were more than double the rates for all duals, and particularly higher for dehydration and diarrhea.

Table 27a
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries from
nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005
Race/ethnicity: All

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	1,571,920	382,846	100.0	360	6.7
Altered mental status, acute confusion, delirium	—	1,777	0.5	2	9.5
Anemia	—	6,912	1.8	7	4.4
COPD, asthma	—	34,585	9.0	33	5.6
Congestive heart failure	—	62,813	16.4	59	6.2
Constipation, impaction	—	4,502	1.2	4	5.2
Dehydration	—	46,976	12.3	44	6.4
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	6,188	1.6	6	7.2
Falls/trauma	—	26,462	6.9	25	6.1
Hypertension	—	1,379	0.4	1	4.5
Pneumonia	—	101,357	26.5	96	7.6
Poor glycemic control	—	3,578	0.9	3	5.8
Psychosis, agitation, organic brain syndrome	—	4,125	1.1	4	12.9
Seizures	—	10,361	2.7	10	5.4
Skin ulcers, cellulitis	—	16,126	4.2	15	11.7
Urinary tract infection	—	53,551	14.0	51	5.8
Weight loss and malnutrition	—	2,154	0.6	2	7.7

HCBS = home and community-based services.

NOTE: — = No separate value for the number of enrollees in this condition.

Table 27b
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005
Race/ethnicity: White

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	1,225,398	289,389	100.0	347	6.4
Altered mental status, acute confusion, delirium	—	1,385	0.5	2	9.5
Anemia	—	4,818	1.7	6	4.1
COPD, asthma	—	27,600	9.5	33	5.5
Congestive heart failure	—	45,804	15.8	55	6.0
Constipation, impaction	—	3,137	1.1	4	5.1
Dehydration	—	32,355	11.2	39	6.1
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	4,949	1.7	6	7.0
Falls/trauma	—	23,246	8.0	28	5.9
Hypertension	—	807	0.3	1	4.4
Pneumonia	—	81,239	28.1	98	7.2
Poor glycemic control	—	2,063	0.7	2	5.2
Psychosis, agitation, organic brain syndrome	—	3,104	1.1	4	12.8
Seizures	—	6,580	2.3	8	5.1
Skin ulcers, cellulitis	—	11,645	4.0	14	10.3
Urinary tract infection	—	39,433	13.6	48	5.6
Weight loss and malnutrition	—	1,224	0.4	1	7.5

HCBS = home and community-based services.

NOTE: — = No separate value for the number of enrollees in this condition.

Table 27c
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005
Race/ethnicity: Black

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	262,538	73,393	100.0	411	7.6
Altered mental status, acute confusion, delirium	—	336	0.5	2	9.4
Anemia	—	1,710	2.3	10	5.2
COPD, asthma	—	5,372	7.3	30	6.0
Congestive heart failure	—	13,755	18.7	78	6.6
Constipation, impaction	—	1,115	1.5	6	5.5
Dehydration	—	12,150	16.6	68	7.3
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	897	1.2	5	8.2
Falls/trauma	—	2,135	2.9	12	6.9
Hypertension	—	480	0.7	3	4.8
Pneumonia	—	14,584	19.9	82	8.9
Poor glycemic control	—	1,261	1.7	7	6.7
Psychosis, agitation, organic brain syndrome	—	813	1.1	5	13.5
Seizures	—	3,236	4.4	18	6.1
Skin ulcers, cellulitis	—	3,582	4.9	20	16.1
Urinary tract infection	—	11,177	15.2	63	6.5
Weight loss and malnutrition	—	790	1.1	4	7.8

HCBS = home and community-based services.

NOTE: — = No separate value for the number of enrollees in this condition.

Table 27d
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005
Race/ethnicity: Hispanic

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	39,394	10,358	100.0	420	8.0
Altered mental status, acute confusion, delirium	—	29	0.3	1	10.4
Anemia	—	196	1.9	8	4.6
COPD, asthma	—	915	8.8	37	6.4
Congestive heart failure	—	1,841	17.8	75	7.4
Constipation, impaction	—	147	1.4	6	5.2
Dehydration	—	1,256	12.1	51	7.0
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	198	1.9	8	7.4
Falls/trauma	—	511	4.9	21	7.7
Hypertension	—	50	0.5	2	3.8
Pneumonia	—	2,396	23.1	98	9.9
Poor glycemic control	—	164	1.6	7	6.6
Psychosis, agitation, organic brain syndrome	—	125	1.2	5	13.5
Seizures	—	304	2.9	12	5.9
Skin ulcers, cellulitis	—	509	4.9	21	13.6
Urinary tract infection	—	1,649	15.9	67	6.7
Weight loss and malnutrition	—	68	0.7	3	10.3

HCBS = home and community-based services.

NOTE: — = No separate value for the number of enrollees in this condition.

Table 27e
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005
Race/ethnicity: Other

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	44,590	9,706	100.0	355	7.6
Altered mental status, acute confusion, delirium	—	27	0.3	1	8.4
Anemia	—	188	1.9	7	5.1
COPD, asthma	—	698	7.2	26	6.6
Congestive heart failure	—	1,413	14.6	52	7.1
Constipation, impaction	—	103	1.1	4	5.5
Dehydration	—	1,215	12.5	45	6.6
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	144	1.5	5	8.9
Falls/trauma	—	570	5.9	21	6.6
Hypertension	—	42	0.4	2	4.0
Pneumonia	—	3,138	32.3	115	9.0
Poor glycemic control	—	90	0.9	3	5.9
Psychosis, agitation, organic brain syndrome	—	83	0.9	3	12.5
Seizures	—	241	2.5	9	5.1
Skin ulcers, cellulitis	—	390	4.0	14	12.0
Urinary tract infection	—	1,292	13.3	48	6.0
Weight loss and malnutrition	—	72	0.7	3	7.9

HCBS = home and community-based services.

NOTE: — = No separate value for the number of enrollees in this condition.

Table 28a
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicaid-covered nursing facility stays , 2005
Race/ethnicity: All

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	1,087,037	240,753	100.0	338	6.6
Altered mental status, acute confusion, delirium	—	1,351	0.6	2	9.3
Anemia	—	5,224	2.2	7	4.2
COPD, asthma	—	14,382	6.0	20	5.6
Congestive heart failure	—	27,847	11.6	39	6.0
Constipation, impaction	—	2,574	1.1	4	5.5
Dehydration	—	24,900	10.3	35	6.3
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	3,958	1.6	6	6.3
Falls/trauma	—	22,657	9.4	32	5.8
Hypertension	—	553	0.2	1	5.2
Pneumonia	—	78,975	32.8	111	7.2
Poor glycemic control	—	1,688	0.7	2	6.2
Psychosis, agitation, organic brain syndrome	—	3,296	1.4	5	12.6
Seizures	—	6,282	2.6	9	5.2
Skin ulcers, cellulitis	—	11,786	4.9	17	10.6
Urinary tract infection	—	34,220	14.2	48	5.6
Weight loss and malnutrition	—	1,060	0.4	1	7.5

NOTE: — = No separate value for the number of enrollees in this condition.

Table 28b
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicaid-covered nursing facility stays, 2005
Race/ethnicity: White

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	883,091	188,941	100.0	325	6.3
Altered mental status, acute confusion, delirium	—	1,065	0.6	2	9.4
Anemia	—	3,721	2.0	6	4.0
COPD, asthma	—	11,833	6.3	20	5.5
Congestive heart failure	—	21,878	11.6	38	5.7
Constipation, impaction	—	1,877	1.0	3	5.4
Dehydration	—	17,650	9.3	31	6.0
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	3,226	1.7	6	6.2
Falls/trauma	—	20,006	10.6	35	5.7
Hypertension	—	341	0.2	1	5.1
Pneumonia	—	64,155	34.0	111	6.9
Poor glycemic control	—	1,016	0.5	2	5.5
Psychosis, agitation, organic brain syndrome	—	2,487	1.3	4	12.5
Seizures	—	4,090	2.2	7	4.8
Skin ulcers, cellulitis	—	8,800	4.7	15	9.3
Urinary tract infection	—	26,183	13.9	45	5.4
Weight loss and malnutrition	—	613	0.3	1	7.6

NOTE: — = No separate value for the number of enrollees in this condition.

Table 28c
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicaid-covered nursing facility stays, 2005
Race/ethnicity: Black

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	156,832	40,645	100.0	400	7.7
Altered mental status, acute confusion, delirium	—	244	0.6	2	9.2
Anemia	—	1,243	3.1	12	4.9
COPD, asthma	—	1,933	4.8	19	6.0
Congestive heart failure	—	4,825	11.9	48	6.8
Constipation, impaction	—	583	1.4	6	6.1
Dehydration	—	6,105	15.0	61	7.2
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	548	1.3	5	7.4
Falls/trauma	—	1,760	4.3	17	6.6
Hypertension	—	184	0.5	2	5.5
Pneumonia	—	10,866	26.7	108	8.5
Poor glycemic control	—	551	1.4	5	7.2
Psychosis, agitation, organic brain syndrome	—	648	1.6	6	13.0
Seizures	—	1,904	4.7	19	5.8
Skin ulcers, cellulitis	—	2,393	5.9	24	15.1
Urinary tract infection	—	6,475	15.9	64	6.4
Weight loss and malnutrition	—	383	0.9	4	7.1

NOTE: — = No separate value for the number of enrollees in this condition.

Table 28d
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicaid-covered nursing facility stays, 2005
Race/ethnicity: Hispanic

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	20,383	5,397	100.0	431	8.1
Altered mental status, acute confusion, delirium	—	22	0.4	2	9.6
Anemia	—	126	2.3	10	4.6
COPD, asthma	—	333	6.2	27	6.8
Congestive heart failure	—	579	10.7	47	8.2
Constipation, impaction	—	64	1.2	5	5.7
Dehydration	—	574	10.6	46	7.3
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	102	1.9	8	6.4
Falls/trauma	—	416	7.7	33	7.4
Hypertension	—	14	0.3	1	3.6
Pneumonia	—	1,681	31.1	135	9.3
Poor glycemic control	—	72	1.3	6	7.2
Psychosis, agitation, organic brain syndrome	—	95	1.8	8	12.9
Seizures	—	152	2.8	12	5.5
Skin ulcers, cellulitis	—	322	6.0	26	11.6
Urinary tract infection	—	811	15.0	65	6.5
Weight loss and malnutrition	—	34	0.6	3	8.3

NOTE: — = No separate value for the number of enrollees in this condition.

Table 28e
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicaid-covered nursing facility stays, 2005
Race/ethnicity: Other

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	26,731	5,770	100.0	346	7.4
Altered mental status, acute confusion, delirium	—	20	0.3	1	7.8
Anemia	—	134	2.3	8	5.1
COPD, asthma	—	283	4.9	17	6.1
Congestive heart failure	—	565	9.8	34	6.6
Constipation, impaction	—	50	0.9	3	5.4
Dehydration	—	571	9.9	34	6.4
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	82	1.4	5	6.3
Falls/trauma	—	475	8.2	29	6.3
Hypertension	—	14	0.2	1	4.7
Pneumonia	—	2,273	39.4	137	8.4
Poor glycemic control	—	49	0.8	3	6.6
Psychosis, agitation, organic brain syndrome	—	66	1.1	4	11.5
Seizures	—	136	2.4	8	5.2
Skin ulcers, cellulitis	—	271	4.7	16	11.1
Urinary tract infection	—	751	13.0	45	6.1
Weight loss and malnutrition	—	30	0.5	2	9.3

NOTE: — = No separate value for the number of enrollees in this condition.

Table 29a
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicare-covered skilled nursing facility stays, 2005
Race/ethnicity: All

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	560,908	73,468	100.0	942	8.4
Altered mental status, acute confusion, delirium	—	426	0.6	6	9.9
Anemia	—	1,688	2.3	22	5.1
COPD, asthma	—	4,033	5.5	53	7.3
Congestive heart failure	—	12,332	16.8	161	7.4
Constipation, impaction	—	557	0.8	7	6.2
Dehydration	—	9,472	12.9	124	7.8
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	2,230	3.0	29	8.7
Falls/trauma	—	3,805	5.2	50	7.5
Hypertension	—	111	0.2	1	6.9
Pneumonia	—	22,382	30.5	291	8.9
Poor glycemic control	—	530	0.7	7	6.9
Psychosis, agitation, organic brain syndrome	—	829	1.1	11	14.3
Seizures	—	1,575	2.1	21	7.2
Skin ulcers, cellulitis	—	4,340	5.9	57	14.8
Urinary tract infection	—	8,564	11.7	112	7.1
Weight loss and malnutrition	—	594	0.8	8	8.8

NOTE: — = No separate value for the number of enrollees in this condition.

Table 29b
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicare-covered skilled nursing facility stays, 2005
Race/ethnicity: White

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	427,936	53,925	100.0	904	7.9
Altered mental status, acute confusion, delirium	—	320	0.6	5	9.8
Anemia	—	1,097	2.0	19	4.6
COPD, asthma	—	3,310	6.1	57	6.8
Congestive heart failure	—	9,193	17.0	157	7.1
Constipation, impaction	—	378	0.7	6	6.1
Dehydration	—	6,391	11.9	109	7.3
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	1,723	3.2	29	8.4
Falls/trauma	—	3,240	6.0	55	7.3
Hypertension	—	61	0.1	1	6.2
Pneumonia	—	17,084	31.7	290	8.4
Poor glycemic control	—	313	0.6	5	6.2
Psychosis, agitation, organic brain syndrome	—	617	1.1	11	14.0
Seizures	—	972	1.8	17	6.9
Skin ulcers, cellulitis	—	2,845	5.3	49	13.2
Urinary tract infection	—	6,064	11.2	103	6.7
Weight loss and malnutrition	—	317	0.6	5	8.7

NOTE: — = No separate value for the number of enrollees in this condition.

Table 29c
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicare-covered skilled nursing facility stays, 2005
Race/ethnicity: Black

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	98,573	14,781	100.0	1,056	9.7
Altered mental status, acute confusion, delirium	—	92	0.6	7	9.8
Anemia	—	467	3.2	34	6.2
COPD, asthma	—	526	3.6	39	8.9
Congestive heart failure	—	2,423	16.4	177	8.0
Constipation, impaction	—	137	0.9	10	6.1
Dehydration	—	2,469	16.7	181	8.9
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	349	2.4	26	9.5
Falls/trauma	—	375	2.5	28	8.3
Hypertension	—	39	0.3	3	8.3
Pneumonia	—	3,718	25.2	271	10.3
Poor glycemic control	—	170	1.2	12	8.3
Psychosis, agitation, organic brain syndrome	—	165	1.1	12	15.2
Seizures	—	493	3.3	36	7.8
Skin ulcers, cellulitis	—	1,189	8.0	87	18.2
Urinary tract infection	—	1,940	13.1	142	8.0
Weight loss and malnutrition	—	229	1.5	17	8.8

NOTE: — = No separate value for the number of enrollees in this condition.

Table 29d
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicare-covered skilled nursing facility stays, 2005
Race/ethnicity: Hispanic

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	16,716	2,491	100.0	1,159	10.1
Altered mental status, acute confusion, delirium	—	7	0.3	3	12.9
Anemia	—	70	2.8	34	4.4
COPD, asthma	—	107	4.3	51	9.6
Congestive heart failure	—	410	16.5	196	9.0
Constipation, impaction	—	21	0.8	10	6.9
Dehydration	—	313	12.6	150	8.3
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	96	3.9	46	8.6
Falls/trauma	—	95	3.8	46	8.8
Hypertension	—	5	0.2	2	4.0
Pneumonia	—	715	28.7	340	11.5
Poor glycemic control	—	32	1.3	15	7.6
Psychosis, agitation, organic brain syndrome	—	30	1.2	14	15.3
Seizures	—	58	2.3	28	7.3
Skin ulcers, cellulitis	—	187	7.5	90	17.0
Urinary tract infection	—	325	13.0	156	8.4
Weight loss and malnutrition	—	20	0.8	10	14.2

NOTE: — = No separate value for the number of enrollees in this condition.

Table 29e
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in
Medicare-covered skilled nursing facility stays, 2005
Race/ethnicity: Other

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	17,683	2,271	100.0	1,032	9.5
Altered mental status, acute confusion, delirium	—	7	0.3	3	10.3
Anemia	—	54	2.4	25	5.2
COPD, asthma	—	90	4.0	42	11.0
Congestive heart failure	—	306	13.5	142	9.1
Constipation, impaction	—	21	0.9	10	7.0
Dehydration	—	299	13.2	139	7.9
Diarrhea, gastroenteritis, <i>C. Difficile</i>	—	62	2.7	29	12.3
Falls/trauma	—	95	4.2	44	8.3
Hypertension	—	6	0.3	3	8.2
Pneumonia	—	865	38.1	399	10.6
Poor glycemic control	—	15	0.7	7	5.5
Psychosis, agitation, organic brain syndrome	—	17	0.7	8	16.6
Seizures	—	52	2.3	24	6.4
Skin ulcers, cellulitis	—	119	5.2	55	14.1
Urinary tract infection	—	235	10.3	110	7.1
Weight loss and malnutrition	—	28	1.2	13	6.0

NOTE: — = No separate value for the number of enrollees in this condition.

The hospitalization rates from Medicaid community aged/disabled waiver stays (**Table 30a**) were somewhat lower than the rates for all duals included in this study combined (**Table 28a**). As discussed in Section 3, our panel review of potentially avoidable hospitalizations indicated that some conditions would potentially be more preventable and/or manageable (primarily more manageable) in a nursing facility environment than in the community, given the resources generally available in nursing facilities (some by requirement). We, therefore, created a subset of our potentially avoidable hospitalization conditions that excluded those conditions that might be more difficult to prevent or treat in a community setting. Using this reduced list of conditions, there were 68,625 potentially avoidable hospitalizations from HCBS waiver stays.

5.4 Costs Associated with Potentially Avoidable Hospitalizations

The total costs of these potentially avoidable hospitalizations, as paid by both the Medicare and Medicaid programs, are presented in **Tables 31–34**. Overall, these hospitalizations cost \$3.1 billion, with an average of \$8,168 per stay. Of these total costs, Medicaid accounted for \$123 million. Expenditures for beneficiaries in New York accounted for 9.6% of the total costs for potentially avoidable hospitalizations, in Texas for 9.0%, in California for 8.1%, and in Illinois for 6.5%.

Table 32 shows that for hospitalizations from Medicaid nursing facility stays the total costs were \$1.9 billion, of which \$82 million was Medicaid spending. Of the total costs of potentially avoidable hospitalizations from Medicaid nursing facility stays, expenditures for beneficiaries in New York accounted for 10.4%, in Texas for 9.2%, and in California for 8.1%. The average costs per potentially avoidable hospitalization varied significantly among the states, with Alaska, California, the District of Columbia, Nevada, and New York above \$11,000, and West Virginia, South Dakota, and North Dakota below \$6,000.

Table 33 shows that for hospitalizations from Medicare skilled nursing facility stays the total costs were \$738 million, with an average cost of \$10,041. Of these costs of hospitalizations from Medicare-covered skilled nursing facility stays, expenditures for beneficiaries in New York accounted for 13.4%, in California for 11.4%, and in Texas for 8.1%.

Finally, Table 34 shows that the total costs of hospitalizations from Medicaid HCBS waiver stays were \$463 million, with a lower average cost of \$6,740. The variation in expenditures for beneficiaries across state HCBS waiver programs differed from those from nursing facility and skilled nursing facility stays, with the highest percentage of expenditures from Illinois, accounting for 11.1%, in Ohio for 10.7%, and in Texas for 9.6%. (Data were not available for New York.)

Table 30a
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in aged or disabled HCBS waivers, 2005
Race/ethnicity: All

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	373,637	68,625	100.0	250	5.5
COPD, asthma	—	16,170	23.6	59	5.2
Congestive heart failure	—	22,634	33.0	83	5.8
Constipation, impaction	—	1,371	2.0	5	4.3
Dehydration	—	12,604	18.4	46	5.7
Hypertension	—	715	1.0	3	3.6
Poor glycemic control	—	1,360	2.0	5	4.9
Seizures	—	2,504	3.6	9	5.0
Urinary tract infection	—	10,767	15.7	39	5.3
Weight loss and malnutrition	—	500	0.7	2	6.9

HCBS = home and community-based services.

NOTE: These results use a reduced list of conditions associated with potentially avoidable hospitalizations determined appropriate for HCBS waiver program analyses. This reduced list is used because hospitalization may be clinically appropriate for community-residing frail or disabled beneficiaries for some conditions. See Section 3 for details.

— = No separate value for the number of enrollees in this condition.

Table 30b
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in aged or disabled HCBS waivers, 2005
Race/ethnicity: White

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	264,712	46,523	100.0	241	5.3
COPD, asthma	—	12,457	26.8	65	5.2
Congestive heart failure	—	14,733	31.7	77	5.6
Constipation, impaction	—	882	1.9	5	4.1
Dehydration	—	8,314	17.9	43	5.4
Hypertension	—	405	0.9	2	3.6
Poor glycemic control	—	734	1.6	4	4.3
Seizures	—	1,518	3.3	8	4.6
Urinary tract infection	—	7,186	15.4	37	5.1
Weight loss and malnutrition	—	294	0.6	2	6.0

HCBS = home and community-based services.

NOTES: These results use a reduced list of conditions associated with potentially avoidable hospitalizations determined appropriate for HCBS waiver program analyses. This reduced list is used because hospitalization may be clinically appropriate for community-residing frail or disabled beneficiaries for some conditions. See Section 3 for details.

— = No separate value for the number of enrollees in this condition.

Table 30c
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in aged or disabled HCBS waivers, 2005
Race/ethnicity: Black

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	84,357	17,967	100.0	285	5.9
COPD, asthma	—	2,913	16.2	46	5.4
Congestive heart failure	—	6,507	36.2	103	6.0
Constipation, impaction	—	395	2.2	6	4.6
Dehydration	—	3,576	19.9	57	6.4
Hypertension	—	257	1.4	4	3.7
Poor glycemic control	—	540	3.0	9	5.6
Seizures	—	839	4.7	13	5.8
Urinary tract infection	—	2,762	15.4	44	5.8
Weight loss and malnutrition	—	178	1.0	3	8.1

HCBS = home and community-based services.

NOTES: These results use a reduced list of conditions associated with potentially avoidable hospitalizations determined appropriate for HCBS waiver program analyses. This reduced list is used because hospitalization may be clinically appropriate for community-residing frail or disabled beneficiaries for some conditions. See Section 3 for details.

— = No separate value for the number of enrollees in this condition.

Table 30d
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in aged or disabled HCBS waivers, 2005
Race/Ethnicity: Hispanic

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	12,996	2,470	100.0	247	5.7
COPD, asthma	—	475	19.2	48	5.3
Congestive heart failure	—	852	34.5	85	6.1
Constipation, impaction	—	62	2.5	6	4.2
Dehydration	—	369	14.9	37	5.4
Hypertension	—	31	1.3	3	3.8
Poor glycemic control	—	60	2.4	6	5.5
Seizures	—	94	3.8	9	5.9
Urinary tract infection	—	513	20.8	51	5.7
Weight loss and malnutrition	—	14	0.6	1	9.6

HCBS = home and community-based services.

NOTES: These results use a reduced list of conditions associated with potentially avoidable hospitalizations determined appropriate for HCBS waiver program analyses. This reduced list is used because hospitalization may be clinically appropriate for community-residing frail or disabled beneficiaries for some conditions. See Section 3 for details.

— = No separate value for the number of enrollees in this condition.

Table 30e
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in aged or disabled HCBS waivers, 2005
Race/ethnicity: Other

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	11,572	1,665	100.0	197	5.7
COPD, asthma	—	325	19.5	39	5.8
Congestive heart failure	—	542	32.6	64	6.4
Constipation, impaction	—	32	1.9	4	4.6
Dehydration	—	345	20.7	41	5.9
Hypertension	—	22	1.3	3	2.5
Poor glycemic control	—	26	1.6	3	5.1
Seizures	—	53	3.2	6	3.8
Urinary tract infection	—	306	18.4	36	4.9
Weight loss and malnutrition	—	14	0.8	2	8.9

HCBS = home and community-based services.

NOTES: These results use a reduced list of conditions associated with potentially avoidable hospitalizations determined appropriate for HCBS waiver program analyses. This reduced list is used because hospitalization may be clinically appropriate for community-residing frail or disabled beneficiaries for some conditions. See Section 3 for details.

— = No separate value for the number of enrollees in this condition.

Table 31
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries from
nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers,
by average dollars, 2005

Location	Average dollars per potentially avoidable hospitalization	Potentially avoidable hospitalizations	Total dollars	Total Medicare dollars	Total Medicaid dollars
U.S.	8,168	382,846	3,126,998,895	3,003,950,868	123,048,027
District of Columbia	12,076	1,118	13,500,828	12,550,020	950,808
California	12,045	20,980	252,702,840	245,469,632	7,233,208
New York	11,709	25,652	300,354,099	283,526,664	16,827,435
Nevada	11,006	1,003	11,039,358	10,356,179	683,179
Alaska	10,025	269	2,696,808	2,581,272	115,536
Maryland	9,976	5,235	52,222,861	49,343,318	2,879,543
Hawaii	9,437	473	4,463,569	4,093,104	370,465
New Jersey	9,265	12,443	115,278,288	111,108,201	4,170,087
Connecticut	9,201	6,597	60,700,633	58,216,223	2,484,410
Louisiana	8,958	12,231	109,561,978	105,358,690	4,203,288
Delaware	8,739	1,160	10,137,239	9,453,944	683,295
Massachusetts	8,686	9,232	80,191,927	78,607,128	1,584,799
Washington	8,344	2,570	21,443,472	20,956,597	486,875
Michigan	8,322	10,916	90,839,343	90,503,759	335,584
Texas	8,321	33,920	282,251,389	276,227,034	6,024,355
Rhode Island	8,160	1,517	12,379,161	11,947,339	431,822
Pennsylvania	8,100	17,497	141,722,182	135,752,346	5,969,836
Florida	8,058	20,217	162,898,823	155,083,782	7,815,041
Illinois	7,687	26,292	202,105,024	197,373,400	4,731,624
Oklahoma	7,664	8,034	61,572,125	56,907,773	4,664,352
Vermont	7,660	406	3,109,966	2,924,904	185,062
Utah	7,644	594	4,540,744	4,362,196	178,548
Ohio	7,589	23,299	176,820,327	163,525,248	13,295,079
Wisconsin	7,587	4,895	37,139,144	34,732,797	2,406,347
Minnesota	7,452	2,598	19,360,612	18,086,140	1,274,472
New Mexico	7,415	1,328	9,847,011	9,475,826	371,185

(continued)

Table 31 (continued)
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries from
nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers,
by average dollars, 2005

Location	Average dollars per potentially avoidable hospitalization	Potentially avoidable hospitalizations	Total dollars	Total Medicare dollars	Total Medicaid dollars
North Carolina	7,285	9,426	68,666,075	67,526,593	1,139,482
New Hampshire	7,240	1,265	9,158,882	8,602,609	556,273
Nebraska	7,167	2,636	18,892,377	17,597,072	1,295,305
Colorado	7,087	2,920	20,693,860	20,248,138	445,722
Indiana	7,076	9,339	66,084,121	64,793,904	1,290,217
Wyoming	6,930	636	4,407,560	4,081,844	325,716
Oregon	6,929	1,607	11,134,248	11,062,606	71,642
South Carolina	6,862	6,940	47,625,496	46,446,244	1,179,252
Georgia	6,850	12,312	84,340,488	79,805,255	4,535,233
Virginia	6,820	8,285	56,499,983	55,022,302	1,477,681
Missouri	6,784	13,496	91,552,880	89,856,485	1,696,395
Mississippi	6,723	9,133	61,401,026	57,204,394	4,196,632
Arkansas	6,686	7,495	50,109,674	46,425,665	3,684,009
Alabama	6,619	6,907	45,716,271	42,878,987	2,837,284
Tennessee	6,547	11,008	72,065,156	71,436,554	628,602
Kentucky	6,422	10,057	64,589,017	63,678,094	910,923
Kansas	6,301	5,892	37,127,717	35,349,945	1,777,772
Idaho	6,189	1,229	7,606,116	6,796,999	809,117
West Virginia	6,098	3,435	20,948,129	20,620,053	328,076
Iowa	6,046	5,254	31,768,196	29,286,645	2,481,551
Montana	5,918	1,003	5,935,764	5,474,467	461,297
South Dakota	5,662	1,153	6,528,216	6,134,800	393,416
North Dakota	5,592	942	5,267,893	5,097,698	170,195

HCBS = home and community-based services.

Table 32
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries in
Medicaid-covered nursing facility stays, by average dollars, 2005

Location	Average dollars per potentially avoidable hospitalization	Potentially avoidable hospitalizations	Total dollars	Total Medicare dollars	Total Medicaid dollars
U.S.	8,003	240,753	1,926,783,124	1,844,315,895	82,467,229
District of Columbia	11,571	767	8,874,687	8,350,745	523,942
Nevada	11,453	523	5,989,999	5,646,170	343,829
New York	11,420	17,615	201,167,038	188,863,805	12,303,233
California	11,309	13,781	155,852,988	151,330,376	4,522,612
Alaska	11,269	54	608,515	585,940	22,575
Hawaii	10,445	236	2,464,980	2,300,037	164,943
Maryland	9,599	3,565	34,221,146	32,142,040	2,079,106
Connecticut	9,069	2,834	25,700,165	24,464,681	1,235,484
Delaware	8,916	761	6,785,050	6,237,466	547,584
New Jersey	8,804	9,495	83,591,892	80,065,721	3,526,171
Louisiana	8,551	8,889	76,007,883	72,737,808	3,270,075
Massachusetts	8,280	5,929	49,093,807	48,017,346	1,076,461
Texas	8,238	21,631	178,205,252	173,748,511	4,456,741
Washington	8,164	1,849	15,095,833	14,679,342	416,491
Oregon	8,092	405	3,277,127	3,253,982	23,145
Minnesota	8,036	967	7,770,599	7,287,272	483,327
Vermont	7,995	261	2,086,701	1,952,184	134,517
Pennsylvania	7,985	11,074	88,427,140	84,429,033	3,998,107
Florida	7,861	13,377	105,155,693	98,624,228	6,531,465
Michigan	7,843	7,313	57,352,912	57,173,312	179,600
Utah	7,726	393	3,036,141	2,893,519	142,622
Oklahoma	7,664	4,598	35,240,811	32,453,652	2,787,159
Rhode Island	7,634	844	6,443,057	6,181,667	261,390
Ohio	7,608	12,862	97,857,259	90,044,352	7,812,907
Colorado	7,487	1,279	9,576,511	9,344,494	232,017
New Mexico	7,429	823	6,113,703	5,838,201	275,502
Wisconsin	7,337	3,999	29,339,280	27,223,218	2,116,062

(continued)

Table 32 (continued)
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries in Medicaid-covered nursing facility stays, by average dollars, 2005

Location	Average dollars per potentially avoidable hospitalization	Potentially avoidable hospitalizations	Total dollars	Total Medicare dollars	Total Medicaid dollars
North Carolina	7,332	5,035	36,914,259	36,233,922	680,337
Illinois	7,270	15,122	109,931,906	107,746,512	2,185,394
New Hampshire	7,133	714	5,092,609	4,765,328	327,281
Wyoming	6,984	349	2,437,478	2,243,982	193,496
South Carolina	6,891	3,340	23,016,724	22,384,206	632,518
Nebraska	6,876	1,768	12,156,671	11,260,927	895,744
Indiana	6,871	7,129	48,985,654	47,945,324	1,040,330
Idaho	6,744	443	2,987,728	2,776,462	211,266
Mississippi	6,720	5,356	35,994,575	33,163,287	2,831,288
Missouri	6,711	7,712	51,753,967	50,873,673	880,294
Georgia	6,708	8,036	53,905,415	50,629,911	3,275,504
Virginia	6,636	4,458	29,581,205	28,745,770	835,435
Arkansas	6,442	4,824	31,075,317	28,484,281	2,591,036
Kentucky	6,418	5,962	38,264,761	37,758,890	505,871
Alabama	6,405	4,607	29,508,340	27,453,703	2,054,637
Montana	6,242	630	3,932,554	3,622,602	309,952
Tennessee	6,190	8,382	51,880,731	51,494,702	386,029
Kansas	6,143	3,407	20,928,685	20,111,813	816,872
Iowa	6,019	3,273	19,700,503	18,139,905	1,560,598
West Virginia	5,844	2,403	14,043,209	13,778,640	264,569
South Dakota	5,679	933	5,298,613	4,930,258	368,355
North Dakota	5,437	746	4,056,052	3,902,696	153,356

Table 33
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries in Medicare-covered skilled nursing facility stays, by average dollars, 2005

Location	Average dollars per potentially avoidable hospitalization	Potentially avoidable hospitalizations	Total dollars	Total Medicare dollars	Total Medicaid dollars
U.S.	10,041	73,468	737,687,276	719,394,659	18,292,617
District of Columbia	16,186	181	2,929,632	2,605,876	323,756
California	14,694	5,717	84,007,946	81,662,343	2,345,603
Nevada	14,075	157	2,209,850	2,072,391	137,459
New York	12,344	8,033	99,159,055	94,634,965	4,524,090
Maryland	11,940	1,011	12,071,184	11,725,765	345,419
Hawaii	11,404	54	615,791	570,728	45,063
Alaska	11,393	6	68,357	67,754	603
Louisiana	11,112	2,592	28,802,827	28,107,442	695,385
New Jersey	10,876	2,796	30,408,249	29,786,861	621,388
Michigan	10,664	2,166	23,097,445	23,006,363	91,082
Texas	10,502	5,677	59,618,247	59,234,280	383,967
Illinois	10,305	3,957	40,775,953	39,168,599	1,607,354
Rhode Island	10,249	298	3,054,172	2,988,714	65,458
Connecticut	9,945	2,169	21,570,198	21,057,991	512,207
Massachusetts	9,761	2,277	22,226,396	21,946,550	279,846
Oklahoma	9,583	923	8,845,413	8,414,225	431,188
New Mexico	9,491	217	2,059,534	2,033,593	25,941
Pennsylvania	9,293	2,906	27,006,441	26,516,538	489,903
Ohio	9,004	3,273	29,469,769	28,272,028	1,197,741
Delaware	8,997	205	1,844,397	1,794,900	49,497
Florida	8,993	4,739	42,620,081	42,416,380	203,701
Wyoming	8,987	60	539,235	534,372	4,863
Utah	8,901	124	1,103,708	1,085,428	18,280
Minnesota	8,833	440	3,886,369	3,751,409	134,960
Washington	8,804	721	6,347,639	6,277,255	70,384
Colorado	8,799	313	2,754,120	2,742,970	11,150
Oregon	8,713	167	1,455,081	1,452,924	2,157

(continued)

Table 33 (continued)
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries in Medicare-covered skilled nursing facility stays, by average dollars, 2005

Location	Average dollars per potentially avoidable hospitalization	Potentially avoidable hospitalizations	Total dollars	Total Medicare dollars	Total Medicaid dollars
Wisconsin	8,705	896	7,799,863	7,509,578	290,285
Kansas	8,672	607	5,263,636	4,930,650	332,986
Nebraska	8,661	431	3,732,996	3,551,962	181,034
Arkansas	8,512	955	8,128,732	7,944,509	184,223
New Hampshire	8,478	160	1,356,549	1,342,610	13,939
North Carolina	8,415	2,018	16,981,995	16,749,331	232,664
Indiana	8,409	1,676	14,092,670	13,914,111	178,559
Missouri	8,269	1,920	15,876,062	15,553,563	322,499
Georgia	8,134	1,909	15,528,083	15,243,280	284,803
Virginia	8,102	1,660	13,448,735	13,085,824	362,911
South Carolina	8,067	1,166	9,406,258	9,238,740	167,518
Idaho	7,861	136	1,069,088	949,031	120,057
Kentucky	7,820	1,647	12,879,518	12,735,977	143,541
Tennessee	7,709	2,539	19,572,059	19,361,371	210,688
Mississippi	7,592	1,740	13,210,441	12,956,960	253,481
Vermont	7,580	59	447,202	436,467	10,735
West Virginia	7,563	554	4,190,098	4,167,624	22,474
Alabama	7,530	1,377	10,369,042	10,163,706	205,336
Iowa	7,202	464	3,341,630	3,207,576	134,054
Montana	6,831	91	621,589	613,093	8,496
North Dakota	6,567	147	965,352	955,611	9,741
South Dakota	6,267	137	858,589	854,441	4,148

Table 34
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries in aged or disabled HCBS waivers, by average dollars, 2005

Location	Average dollars per potentially avoidable hospitalization	Potentially avoidable hospitalizations	Total dollars	Total Medicare dollars	Total Medicaid dollars
U.S.	6,740	68,625	462,528,495	440,240,314	22,288,181
District of Columbia	9,979	170	1,696,509	1,593,399	103,110
Alaska	9,665	209	2,019,936	1,927,578	92,358
Maryland	8,999	659	5,930,531	5,475,513	455,018
Nevada	8,791	323	2,839,510	2,637,619	201,891
California	8,665	1,482	12,841,906	12,476,913	364,993
Massachusetts	8,647	1,026	8,871,723	8,643,231	228,492
Connecticut	8,426	1,594	13,430,270	12,693,551	736,719
New Jersey	8,409	152	1,278,147	1,255,619	22,528
Wyoming	8,409	152	1,278,147	1,255,619	22,528
Delaware	7,772	194	1,507,792	1,421,578	86,214
Rhode Island	7,685	375	2,881,932	2,776,958	104,974
Hawaii	7,556	183	1,382,798	1,222,339	160,459
Pennsylvania	7,475	3,517	26,288,601	24,806,775	1,481,826
Michigan	7,230	1,437	10,388,985	10,324,083	64,902
Florida	7,198	2,101	15,123,049	14,043,174	1,079,875
Illinois	7,126	7,213	51,397,165	50,458,289	938,876
Tennessee	7,039	87	612,366	580,481	31,885
New York	7,002	4	28,007	27,895	112
Oklahoma	6,958	2,513	17,485,900	16,039,895	1,446,005
New Hampshire	6,930	391	2,709,724	2,494,671	215,053
Wisconsin	6,930	391	2,709,724	2,494,671	215,053
Ohio	6,909	7,164	49,493,300	45,208,869	4,284,431
Nebraska	6,871	437	3,002,710	2,784,183	218,527
Texas	6,719	6,612	44,427,890	43,244,243	1,183,647
Vermont	6,698	86	576,064	536,254	39,810
Minnesota	6,468	1,191	7,703,645	7,047,460	656,185
Arkansas	6,355	1,716	10,905,625	9,996,875	908,750

(continued)

Table 34 (continued)
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries in aged or disabled HCBS waivers, by average dollars, 2005

Location	Average dollars per potentially avoidable hospitalization	Potentially avoidable hospitalizations	Total dollars	Total Medicare dollars	Total Medicaid dollars
Louisiana	6,335	750	4,751,268	4,513,440	237,828
Alabama	6,326	923	5,838,889	5,261,578	577,311
West Virginia	6,303	227	1,430,847	1,303,490	127,357
Colorado	6,298	1,328	8,363,228	8,160,673	202,555
Georgia	6,298	2,367	14,906,991	13,932,065	974,926
South Carolina	6,246	2,434	15,202,514	14,823,298	379,216
North Carolina	6,224	2,373	14,769,821	14,543,340	226,481
Virginia	6,216	2,167	13,470,043	13,190,708	279,335
Missouri	6,191	3,864	23,922,851	23,429,249	493,602
Oregon	6,186	1,035	6,402,040	6,355,700	46,340
Mississippi	5,987	2,037	12,196,010	11,084,147	1,111,863
Kansas	5,823	1,878	10,935,395	10,307,481	627,914
New Mexico	5,812	288	1,673,773	1,604,031	69,742
Iowa	5,752	1,517	8,726,063	7,939,164	786,899
Washington	5,680	478	2,714,821	2,673,788	41,033
Indiana	5,629	534	3,005,798	2,934,470	71,328
Kentucky	5,492	2,448	13,444,738	13,183,227	261,511
Idaho	5,460	650	3,549,300	3,071,506	477,794
Utah	5,206	77	400,895	383,249	17,646
North Dakota	5,030	49	246,489	239,391	7,098
Montana	4,899	282	1,381,621	1,238,772	142,849
South Dakota	4,470	83	371,014	350,101	20,913

HCBS = home and community-based services.

SECTION 6 MULTIVARIATE RESULTS

6.1 Results

We ran five hazard models based on long-term care setting, and by age (under age 65 vs. age 65 and over) in some HCBS models. We provide a summary table (**Table 35**) indicating whether certain variables had a significant effect in each model, and if so, the direction of their effect. Variables with positive effects (+) increase the hazard of having a potentially avoidable hospitalization and reduce the expected time to a hospitalization, while variables with negative effects (–) reduce the hazard and increase the expected time to a hospitalization. A positive effect is associated with a hazard ratio greater than one, while a negative effect is associated with a hazard ratio less than one. A hazard ratio greater than one indicates that an individual with this characteristic is more likely to have a potentially avoidable hospitalization sooner than a person without the characteristic; a hazard ratio less than one indicates that an individual with this characteristic is less likely to have a potentially avoidable hospitalization before a person without the characteristic.

This summary is followed by detailed results for each model (see **Tables 36–40**), including the magnitude of the parameter estimate and hazard ratio for each variable. For variables with a positive coefficient and a hazard ratio greater than one, the odds that a person with the characteristic will have a potentially avoidable hospitalization sooner than a person without the characteristic increases with larger values of the parameter estimate and hazard ratio. Conversely, for variables with a negative coefficient and a hazard ratio less than one, the odds that a person with the characteristic will have a potentially avoidable hospitalization before a person without the characteristic decreases with larger negative values of the parameter estimate and values of the hazard ratio that are closer to 0. For example, in the model for nursing facility stays, a person with one chronic condition (odds ratio = 1.200) has 20% higher odds of having a potentially avoidable hospitalization than a person with no chronic conditions, whereas males (odds ratio = 0.108) have 11% higher odds of having a potentially avoidable hospitalization than females. In the HCBS waiver model for enrollees age 65 and over, increasing HCBS spending as a proportion of total state long-term care spending (odds ratio = 0.630) decreases the odds of having a potentially avoidable hospitalization sooner by 37%, while being age 85 and over (odds ratio = 0.881) decreases the odds by 12%.

6.1.1 Factors Significant Across All Models

Table 35 shows that few variables consistently increase or decrease the hazard of having a potentially avoidable hospitalization across models. However, as expected, the hazard of having a potentially avoidable hospitalization increases with the number of chronic conditions. For example, the hazard ratio increases by 20% for each additional chronic condition. There are also differences by race/ethnicity in all models. The hazard increases for those who are black compared to those who are white in every model (hazard ratio is 1.105 from Medicaid-covered facility stays, 1.102 from Medicare-covered facility stays, and 1.121 from HCBS waiver stays—all ages; 1.112 from HCBS waiver stays—age 65 and over; and 1.101 from HCBS waiver stays—under age 65).

Table 35
Summary of variable significance across multivariate hazard models for potentially avoidable hospitalizations

Variable	Model 1 NF n = 713,326	Model 2 SNF n = 720,626	Model 3 HCBS ¹ all ages n = 310,767	Model 4 HCBS 65+ n = 223,828	Model 5 HCBS 0–64 n = 86,939
Individual characteristics					
<i>Age (65–74 reference group omitted)</i>					
0–64	NS	–	NS	NA	NA
75–84	–	NS	–	–	NA
85+	–	NS	–	–	NA
<i>Sex (female is reference group omitted)</i>					
Male	+	+	NS	NS	–
<i>Race/ethnicity (white is reference group omitted)</i>					
Black	+	+	+	+	+
Hispanic	+	+	–	–	NS
Other	+	+	–	–	NS
Number of chronic conditions (0–6)	+	+	+	+	+
<i>Eligibility</i>					
Original reason for Medicare entitlement not aged	+	NS	NS	NS	NA
Eligible for Medicaid as medically needy	–	NS	+	+	NS
Facility characteristics					
Bed hold	NS	NA	NA	NA	NA
Case-mix reimbursement (0, 1)	NS	NA	NA	NA	NA
Per diem reimbursement (average)	+	NA	NA	NA	NA
Wage index	–	NA	NA	NA	NA
Urban	v	NS	NS	NS	NS
Total beds	+	NS	NA	NA	NA
Occupancy rate >90%	–	–	NA	NA	NA
<i>Ownership (for-profit is the reference group profit omitted)</i>					
Nonprofit	–	–	NA	NA	NA
Government	–	–	NA	NA	NA
Chain	–	–	NA	NA	NA
Hours of RN care per resident day	NS	NS	NA	NA	NA
Hours of aide care per resident day	NS	NS	NA	NA	NA

(continued)

Table 35 (continued)
Summary of variable significance across multivariate hazard models for potentially avoidable hospitalizations

Variable	Model 1 NF n = 713,326	Model 2 SNF n = 720,626	Model 3 HCBS ¹ all ages n = 310,767	Model 4 HCBS 65+ n = 223,828	Model 5 HCBS 0–64 n = 86,939
Facility characteristics (continued)					
<i>Beds by payer</i>					
Medicare >20%	+	+	NA	NA	NA
Medicaid >80%	+	+	NA	NA	NA
Other >25%	–	–	NA	NA	NA
Medicaid policy					
State is in top 20% of HCBS: Total LTC spending	NA	NA	–	NA	NA
HCBS: Total LTC spending (continuous variable)	NA	NA	NA	–	NS
Personal care option	NA	NA	–	–	–
Demand and supply variables					
NFBeds75Plus	+	NA	NA	NA	NA
SNFBeds75Plus	NA	+	NA	NA	NA
HospBeds75Plus	+	+	NS	NS	NA
HospBedsAll	NA	NA	NA	NA	NS
TotPop75Plus	–	NS	NS	+	NA

NA = Variable not applicable and used to indicate cells that would otherwise be blank; + = statistically significant factor associated with a shorter time to a potentially avoidable hospitalization; – = statistically significant factor associated with longer time to a potentially avoidable hospitalization

NS = Variable not statistically significant $p \leq 0.05$.

HCBS = home and community-based services; LTC = long-term care; NF = nursing facility; RN = registered nurse; SNF = skilled nursing facility.

NOTE: The HCBS models used a reduced list of conditions to identify potentially avoidable hospitalizations, as described in Section 3 of this report.

Table 36
Results from multivariate hazard models for potentially avoidable hospitalizations of
dually eligible beneficiaries from Medicaid-covered nursing facility stays (n = 713,326)

Variable	Mean	Standard deviation	Parameter estimate	Standard error	Significance level	Hazard ratio
Individual characteristics						
<i>Age (65–74 reference group omitted)</i>						
0–64	0.13	0.34	0.006	0.015	0.688	1.006
75–84	0.35	0.48	–0.028	0.010	0.008	0.973
85+	0.34	0.47	–0.031	0.011	0.005	0.969
<i>Sex (female is reference group omitted)</i>						
Male	0.32	0.47	0.103	0.008	<.0001	1.108
<i>Race/ethnicity (white is reference group omitted)</i>						
Black	0.17	0.38	0.099	0.010	<.0001	1.105
Hispanic	0.02	0.15	0.118	0.023	<.0001	1.126
Other	0.03	0.16	0.085	0.021	<.0001	1.088
Number of chronic conditions (0–6)	3.07	1.63	0.182	0.002	<.0001	1.200
<i>Eligibility</i>						
Original reason for Medicare entitlement not aged	0.28	0.45	0.053	0.010	<.0001	1.055
Eligible for Medicaid as medically needy	0.22	0.41	–0.068	0.009	<.0001	0.934
Facility characteristics						
Bed hold	0.75	0.43	0.013	0.008	0.111	1.013
Case-mix reimbursement	0.52	0.50	–0.012	0.007	0.096	0.988
Average per diem reimbursement	1.01	0.39	0.083	0.011	<.0001	1.087
Wage Index	0.97	0.16	–0.225	0.030	<.0001	0.798
Total beds	145.90	95.62	0.000	0.000	0.030	1.000
Occupancy rate >90%	0.25	0.43	–0.069	0.008	<.0001	0.933
<i>Ownership</i>						
Nonprofit	0.21	0.41	–0.081	0.009	<.0001	0.922
Government	0.06	0.23	–0.221	0.017	<.0001	0.802
Chain	0.53	0.50	–0.054	0.007	<.0001	0.948
Hours of RN care per resident day	0.28	0.52	–0.025	0.018	0.162	0.975
Hours of aide care per resident day	2.23	1.16	–0.006	0.004	0.127	0.994
<i>Beds by payer</i>						
Medicare >20%	0.13	0.34	0.051	0.010	<.0001	1.053
Medicaid >80%	0.24	0.43	0.054	0.009	<.0001	1.056
Other >25%	0.22	0.42	–0.103	0.009	<.0001	0.902
Demand and supply variables						
Urban	0.74	0.44	–0.075	0.009	<.0001	0.928
NFBeds75Plus	6.24	20.46	0.002	0.000	<.0001	1.002
HospBeds75Plus	63.88	47.84	0.000	0.000	<.0001	1.000
TotPop75Plus	6.24	2.02	–0.006	0.002	0.003	0.994

RN = registered nurse.

Table 37
Results from multivariate hazard models for potentially avoidable hospitalizations of dually eligible beneficiaries from Medicare-covered skilled nursing facility stays (n = 720,626)

Variable	Mean	Standard deviation	Parameter estimate	Standard error	Significance level	Hazard ratio
Individual characteristics						
<i>Age (65–74 reference group omitted)</i>						
0–64	0.15	0.36	–0.065	0.017	0.000	0.937
75–84	0.35	0.48	–0.001	0.012	0.905	0.999
85+	0.29	0.45	0.001	0.013	0.939	1.001
<i>Sex (female is reference group omitted)</i>						
Male	0.33	0.47	0.125	0.009	<.0001	1.133
<i>Race/ethnicity (white is reference group omitted)</i>						
Black	0.19	0.39	0.097	0.011	<.0001	1.102
Hispanic	0.03	0.17	0.129	0.025	<.0001	1.138
Other	0.03	0.17	0.079	0.026	0.002	1.083
Number of chronic conditions (0–6)	2.98	1.62	0.124	0.003	<.0001	1.132
<i>Eligibility</i>						
Original reason for Medicare entitlement not aged	0.31	0.46	–0.013	0.012	0.283	0.987
Eligible for Medicaid as medically needy	0.19	0.39	–0.001	0.011	0.914	0.999
Facility characteristics						
Total beds	140.96	94.70	0.000	0.000	0.258	1.000
Occupancy rate >90%	0.24	0.43	–0.063	0.010	<.0001	0.939
<i>Ownership (for profit is the reference group omitted)</i>						
Nonprofit	0.21	0.41	–0.044	0.012	0.000	0.957
Government	0.04	0.20	–0.141	0.024	<.0001	0.869
Chain	0.58	0.49	–0.058	0.009	<.0001	0.943
Hours of RN care per resident day	0.38	1.24	0.004	0.007	0.510	1.004
Hours of aide care per resident day	2.25	0.99	–0.008	0.005	0.110	0.993
<i>Beds by payer</i>						
Medicare >20%	0.22	0.42	0.049	0.011	<.0001	1.050
Medicaid >80%	0.18	0.39	0.025	0.012	0.034	1.025
Other >25%	0.20	0.40	–0.063	0.012	<.0001	0.939
Demand and supply variables						
Urban	0.77	0.42	0.003	0.011	0.813	1.003
NFBeds75Plus	63.48	46.22	0.000	0.000	<.0001	1.000
HospBeds75Plus	110.64	43.61	0.001	0.000	<.0001	1.001
TotPop75Plus	6.21	1.98	0.001	0.002	0.644	1.001

RN = registered nurse.

Table 38
Results from multivariate hazard models for potentially avoidable hospitalizations
(reduced condition list) of dually eligible beneficiaries from aged or disabled HCBS waiver
stays: All Ages (n = 310,767)

Variable	Mean	Standard deviation	Parameter estimate	Standard error	Significance level	Hazard ratio
Individual characteristics						
<i>Age (65–74 reference group omitted)</i>						
0–64	0.28	0.45	0.035	0.025	0.149	1.036
75–84	0.29	0.45	–0.154	0.019	<.0001	0.857
85+	0.16	0.37	–0.143	0.023	<.0001	0.867
<i>Sex (female is reference group omitted)</i>						
Male	0.28	0.45	–0.016	0.017	0.350	0.984
<i>Race/ethnicity (white is reference group omitted)</i>						
Black	0.24	0.43	0.114	0.017	<.0001	1.121
Hispanic	0.03	0.16	–0.099	0.050	0.048	0.906
Other	0.03	0.17	–0.118	0.047	0.012	0.889
Number of chronic conditions (0–6)	2.52	1.63	0.334	0.004	<.0001	1.396
<i>Eligibility</i>						
Original reason for Medicare entitlement not aged	0.44	0.50	–0.029	0.021	0.156	0.971
Eligible for Medicaid as medically needy	0.02	0.14	0.192	0.052	0.000	1.212
Medicaid policy						
<i>State in top 20% of HCBS expenditures as a proportion of total LTC expenditures</i>	0.12	0.32	–0.125	0.025	<.0001	0.882
<i>Personal care option</i>	0.45	0.50	–0.100	0.015	<.0001	0.905
Demand and supply variables						
Urban	0.47	0.50	–0.006	0.015	0.659	0.994
HospBeds75Plus	59.68	47.32	0.000	0.000	0.072	1.000
TotPop75Plus	6.38	1.92	0.007	0.004	0.085	1.007

HCBS = home and community-based services; LTC = long-term care.

NOTE: The HCBS models used a reduced list of conditions to identify potentially avoidable hospitalizations, as described in Section 3 of this report.

Table 39
Results from multivariate hazard models for potentially avoidable hospitalizations
(reduced condition list) of dually eligible beneficiaries from HCBS waiver stays:
Age 65+ (n = 223,828)

Variable	Mean	Standard deviation	Parameter estimate	Standard error	Significance level	Hazard ratio
Individual characteristics						
<i>Age (65–74 reference group omitted)</i>						
75–84	0.41	0.49	–0.139	0.019	<.0001	0.870
85+	0.23	0.42	–0.126	0.023	<.0001	0.881
<i>Sex (female is reference group omitted)</i>						
Male	0.23	0.42	0.026	0.020	0.183	1.027
<i>Race/ethnicity (white is reference group omitted)</i>						
Black	0.24	0.43	0.115	0.019	<.0001	1.122
Hispanic	0.03	0.17	–0.176	0.057	0.002	0.838
Other	0.03	0.17	–0.123	0.052	0.019	0.884
Number of chronic conditions (0–6)	2.82	1.52	0.326	0.005	<.0001	1.385
<i>Eligibility</i>						
Original reason for Medicare entitlement not aged	0.24	0.43	0.010	0.020	0.618	1.010
Eligible for Medicaid as medically needy	0.02	0.14	0.215	0.058	0.000	1.239
Medicaid policy						
<i>HCBS: Total LTC spending (continuous variable)</i>	0.18	0.09	–0.462	0.120	0.000	0.630
<i>Personal care option</i>	0.48	0.50	–0.075	0.021	0.000	0.928
Demand and supply variables						
Urban	0.47	0.50	–0.028	0.017	0.091	0.972
HospBeds75Plus	59.59	48.90	0.000	0.000	0.094	1.000
TotPop75Plus	6.45	1.93	0.013	0.004	0.003	1.013

HCBS = home and community-based services; LTC = long-term care.

NOTE: The HCBS models used a reduced list of conditions to identify potentially avoidable hospitalizations, as described in Section 3 of this report.

Table 40
Results from multivariate hazard models for potentially avoidable hospitalizations
(reduced condition list) of dually eligible beneficiaries from HCBS waiver stays:
Age 0–64 (n = 86,939)

Variable	Mean	Standard deviation	Parameter estimate	Standard error	Significance level	Hazard ratio
Individual characteristics						
<i>Sex (female is reference group omitted)</i>						
Male	0.40	0.49	−0.119	0.032	0.000	0.887
<i>Race/ethnicity (white is reference group omitted)</i>						
Black	0.26	0.44	0.096	0.037	0.009	1.101
Hispanic	0.02	0.14	0.180	0.099	0.070	1.197
Other	0.03	0.16	−0.112	0.103	0.276	0.894
Number of chronic conditions (0–6)	1.74	1.65	0.346	0.009	<.0001	1.414
<i>Eligibility</i>						
Eligible for Medicaid as medically needy	0.02	0.14	0.048	0.115	0.673	1.050
Medicaid policy						
<i>HCBS: Total LTC spending (continuous variable)</i>	0.55	0.15	−0.071	0.124	0.568	0.931
<i>Personal care option</i>	0.39	0.49	−0.118	0.037	0.001	0.889
Demand and supply variables						
Urban	0.49	0.50	0.050	0.031	0.116	1.051
HospBeds75Plus	3.58	2.82	0.003	0.005	0.586	1.003

HCBS = home and community-based services; LTC = long-term care.

NOTE: The HCBS models used a reduced list of conditions to identify potentially avoidable hospitalizations, as described in Section 3 of this report.

6.1.2 Factors Significant in Facility Models (Nursing Facility and Skilled Nursing Facility)

In addition to the number of chronic conditions, in both nursing facilities and skilled nursing facilities, sex and race/ethnicity are significant positive predictors of the hazard of a potentially avoidable hospitalization. Male residents and those who were black, Hispanic or other race all had higher hazards compared to female residents or white residents, respectively.

Higher proportions of Medicare and Medicaid bed days are significant predictors of higher hazards, while a higher proportion of bed days paid for by other payers is a significant predictor of a lower hazard. For example, the hazard ratio is 1.056 for dually eligible beneficiaries in Medicaid-covered nursing facilities with Medicaid beds over 80% compared to those in Medicaid-covered nursing facilities with 80% or fewer Medicaid beds.

Residents in nonprofit and government-owned facilities have lower hazards for potentially avoidable hospitalizations than do residents of for-profit facilities (the hazard ratio is 0.802 for Medicaid-covered stays in government-owned facilities, and 0.922 in nonprofit facilities; and 0.869 for Medicare-covered stays in government-owned facilities and 0.957 in nonprofit facilities). Residents of chain facilities also have a lower hazards compared to residents of independent facilities (hazard ratio is 0.948 from Medicaid-covered stays, and 0.943 from Medicare-covered stays). The relevant supply variables used in each model are also significant predictors of increased hazards (i.e., nursing facility beds per 1,000 age 75 plus, skilled nursing facility beds per 1,000 age 75 plus and hospital beds per 1,000 age 75 plus).

Among nursing facility residents, several other factors are significant. Lower hazards are predicted for those age 75 and older compared to those age 65–74 and for those who originally qualified for Medicare based on disability compared to those who originally qualified based on age. Qualifying for Medicaid as medically needy is associated with an increased hazard.

Among skilled nursing facility residents, the hazard increases for residents age 0–64 compared to those age 65–74.

6.1.3 Factors Significant in HCBS Waiver Models

Age, race/ethnicity and being medically needy are significant predictors of the hazard of having a potentially avoidable hospitalization from an HCBS waiver stay. Those age 75 and over have lower hazards compared to those age 65–74; presumably, this reflects unmeasured differences in health status associated with this group of younger beneficiaries receiving long-term care services. As in all other models, black beneficiaries have higher hazards than do whites, while those who are Hispanic or other race have lower hazards compared to whites. Being medically needy is a significant predictor of a higher hazard for HCBS enrollees age 65 and over in the model combining those age 0–64 and age 65 and over, though not in the model restricted to those age 0–64. As in the facility models, the hazards rise with increasing numbers of chronic conditions.

Higher state expenditures for HCBS as a proportion of total state long-term care spending are a significant factor in reducing the hazard in the model restricted to beneficiaries age 65 and over and in the model including all ages, but not in the model restricted to beneficiaries age 0–

64. Personal care as an optional state plan benefit reduces the hazards significantly in all HCBS models.

The demand variable, individuals age 75 plus per 1,000, is associated with a significant increase in the hazard in the age 65 and over HCBS waiver model.

6.1.4 Sensitivity Analysis for HCBS Waiver Models

As described in Section 3, we determined that fewer conditions could be prevented or safely managed at home than in nursing facilities or skilled nursing facilities, and so we use a more limited list of conditions in the HCBS waiver models (“reduced” list). As a type of sensitivity analysis, we also ran HCBS waiver hazard models using the same, full list of conditions associated with potentially avoidable hospitalizations employed in the nursing facility and skilled nursing facility models. The results are presented in Appendix E and indicate only minor differences in the role of some of the demographic variables in the models. In contrast to the models presented in this section, men enrolled in HCBS waivers have a higher hazard of hospitalization for the longer list of conditions compared to women (sex was not significant in the reduced list models presented in this section). And blacks have a lower hazard of hospitalization than whites in the longer condition list HCBS waiver models presented in the appendix. In contrast, blacks have a higher hazard of hospitalization than whites in the reduced list HCBS waiver models presented in this section, as in the nursing facility and skilled nursing facility models.

SECTION 7 CONCLUSIONS AND LIMITATIONS

Dually eligible beneficiaries, Medicare beneficiaries whose income and assets are low enough to qualify for Medicaid coverage, are of increasing interest to policymakers, researchers, providers, and consumer advocates. First, these beneficiaries are costly to both programs, accounting for a disproportionate share of Medicare and Medicaid expenditures. While dually eligible individuals make up less than 20% of either Medicare or Medicaid beneficiaries, they account for about one quarter of Medicare expenditures and almost half of Medicaid expenditures. Second, they tend to have multiple chronic conditions and functional impairments, making them a clinically complex and difficult to medically manage population. As a result of their functional impairments, they often use post-acute or long-term services and supports, which they receive either in the community or in nursing facilities.

In this study, we investigated one aspect of health care utilization for a subset of the dually eligible beneficiary population: hospitalizations that might have been avoided among dually eligible beneficiaries receiving Medicaid-covered nursing facility care, Medicare-covered skilled nursing facility care, or living in the community and enrolled in aged or disabled Medicaid home and community-based services (HCBS) waiver programs. Dually eligible beneficiaries receiving Medicaid-covered nursing facility services are generally long-stay residents. Beneficiaries in Medicare-covered skilled nursing facility stays include those who are receiving short-term, post-acute care and are expected to return home, and long-term nursing facility residents temporarily receiving Medicare post-acute care services following a hospitalization. HCBS waiver enrollees are eligible for nursing home care according to their states' level of care criteria, but are receiving community-based services and supports such as personal care, homemaker services, and home delivered meals, instead. These groups are at high risk of expensive hospital use due to their comorbid conditions and decreased functional status. However, they are receiving some ongoing support and monitoring that could be expected to prevent some acute care use. Our study categorizes hospitalizations according to the setting from which the hospitalization occurred.

Potentially avoidable hospitalizations are hospitalizations that would probably not have occurred if high-quality medical care and long-term services and supports had been provided. Lists of conditions associated with potentially avoidable hospitalizations often include exacerbations and complications of chronic conditions such as congestive heart failure or chronic obstructive pulmonary disease, conditions that are "hazards of immobility" such as pressure ulcers or falls and related injuries, dehydration, and infectious diseases such as pneumonia, gastroenteritis, and urinary tract infections. These conditions are considered potentially avoidable because they may either be prevented entirely, or may be treatable without requiring a hospitalization, especially if they are identified quickly. They include conditions that are considered ambulatory care sensitive conditions (i.e., avoidable if adequate disease management and medical monitoring and intervention are available) and those that are nursing care sensitive (i.e., with adequate evaluation and attention to factors like safety, nutrition, fluid intake, and skin integrity).

To construct a list of conditions associated with potentially avoidable hospitalizations, we began by reviewing lists of potentially avoidable hospitalizations and ambulatory care sensitive

conditions used in other studies; we then expanded and refined these lists, keeping in mind the underlying clinical characteristics of the population of dually eligible beneficiaries using nursing facilities, skilled nursing facilities,, and HCBS waivers. As a result of this review, we developed separate lists of conditions associated with potentially avoidable hospitalizations for nursing facility (both Medicaid-covered stays and Medicare-covered skilled nursing facility stays) and HCBS settings. The nursing facility list details 18 condition groups that take into account the 24-hour care, daily monitoring by nurses, and involvement of other medical providers available in these settings. The HCBS list details 10 conditions, recognizing that these beneficiaries may live alone, receive primarily long-term supportive services such as meal preparation and bathing, much less frequent nursing monitoring, and less medical care coordination. As a result some of the omitted conditions may be most appropriately treated in the hospital. We identified ICD-9 codes for each condition and grouped these lists into clinically meaningful subsets.

The study uses both Medicare and Medicaid claims data from the Chronic Condition Data Warehouse (CCW) to evaluate potentially avoidable hospitalization rates and costs, making use of that dataset's timeline file, which indicates whether a beneficiary is in the community, the hospital, a skilled nursing facility, or a long-term nursing facility on each day of the year. We appended the CCW data with information about state Medicaid benefits, indicators of demand and health care supply (e.g., population age 75 and over, nursing facility and hospital bed supply measures.), and facility characteristics (e.g., size, ownership, beds by payer) from various data sources. We used CCW data from 2005, the most recent year available at the time of the study.

Using the resulting lists, we calculated the number, rates, and costs of potentially avoidable hospitalizations (nationally and by state), in total, by payer and by setting. Using multivariate analyses, we also assessed the effects of demographic, facility, and state policy characteristics on the rates of potentially avoidable hospitalizations and their costs. In contrast to earlier studies, we calculated these use rates taking exposure into account, (i.e., the number of days in the setting, and the time to a hospitalization from each setting).

This study identified seven key findings:

First, dually eligible beneficiaries in these settings have high rates of total hospitalizations and of potentially avoidable hospitalizations. In 2005, dually eligible beneficiaries in nursing facilities or receiving Medicaid HCBS waivers had 1,571,920 total hospitalizations. While there may be disagreement about the specific conditions associated with potentially avoidable hospitalizations and whether every condition is preventable or manageable, the volume and costs associated with these hospitalizations are significant. For dually eligible beneficiaries with a nursing facility stay or participation in an HCBS waiver during 2005, we found 382,846 potentially avoidable hospitalizations during those stays in 2005 (approximately 20% of all hospitalizations), at a rate of 360 per 1,000 person years, and a total cost to Medicare and Medicaid of over \$3 billion dollars. In addition to the economic costs, these hospitalizations can result in distress to the beneficiary associated with being hospitalized and with morbid and costly complications of hospitalization, such as delirium, decreased function, and hospital-acquired infections (Ouslander et al., 2010). Even a modest reduction of these hospitalizations would result in substantial savings in economic and human costs.

Second, only five conditions (pneumonia, congestive heart failure, urinary tract infections, dehydration, and chronic obstructive pulmonary disease/asthma) were responsible for 78% of the potentially avoidable hospitalizations across settings. Each of these five conditions is considered an ambulatory care sensitive condition. Targeted interventions and educational initiatives to improve the recognition, assessment, and early management of these conditions may help to reduce these hospitalizations. Models of care that utilize nurse practitioners in collaboration with physicians to enhance primary care in nursing home settings have shown promise in improving chronic disease management and reducing hospitalizations (Ouslander et al., 2010). Timely access to laboratory, imaging and pharmacy services have also been identified as requirements for quality care, but such services are not consistently available and are complicated by varied managed care and Part D enrollments among residents in the same facility (Verdier, 2010).

Third, dually eligible beneficiaries in Medicaid HCBS waiver programs had very high rates of overall hospitalizations and potentially avoidable hospitalizations. Although the reduced list of hospitalizations was most appropriate for evaluating potentially avoidable hospitalization rates from HCBS programs, we also calculated the rates using the full list of conditions to understand more about the medical needs of this population. The potentially avoidable hospitalization rates were 407.6 per 1,000 person years for enrollees in Medicaid HCBS waiver programs using the full condition list, and 250 per 1,000 person years using the more restricted list of conditions. Indeed, dually eligible HCBS waiver beneficiaries had higher overall rates of potentially avoidable hospitalizations than did beneficiaries using Medicaid nursing facility benefits when evaluated using the full list, even though the mean number of chronic conditions was lower in the HCBS population compared to the Medicaid-covered nursing facility population. These high rates of hospitalizations suggest that this long-term care population has high medical needs as well as supportive services needs. As a result, one option might be to consider ways of improving primary care for this population. While HCBS programs are designed primarily to provide assistance with activities of daily living, the need for these support services often results from their underlying medical conditions. Thus, HCBS as currently designed may not be a full substitute for institutional long-term care from a medical standpoint. Even with additional services such as Medicare-covered home health, some acute conditions may not be safely managed at home. At the very least, the HCBS findings clearly point to unmet needs in chronic disease management and early identification of acute exacerbations that might result in hospitalization.

Fourth, while Medicare and Medicaid share in the costs of potentially avoidable hospitalizations, the Medicare program bears the vast majority of these costs for dually eligible beneficiaries. In 2005, the total Medicare costs of these potentially avoidable hospitalizations were \$3 billion compared to only \$123 million for Medicaid. On average, Medicare paid \$7,846 per hospitalization, while Medicaid paid only \$321. This reflects structural differences in Medicare and Medicaid benefits and makes clear the underlying incentive for cost shifting between these programs and between settings. Medicaid pays the costs of long-term nursing facility days and of HCBS services, but bears only minimal cost sharing for inpatient care. Thus, hospital stays of nursing facility residents save Medicaid dollars and reduce staffing demands on nursing facilities under either the Medicare skilled nursing facility benefit or the Medicaid long-term nursing facility benefit, and may provide an incentive for facilities to

discharge residents to acute care facilities. As a result, there appears to belittle financial incentive for state Medicaid agencies to pursue strategies to reduce potentially avoidable hospitalizations.

Fifth, potentially avoidable hospitalization rates vary greatly by state. Across all settings, there is almost a fourfold difference from the lowest (158 per 1,000 person years) to the highest rate of potentially avoidable hospitalizations (591 per 1,000 person years). To some extent this disparity reflects differences in health status; for example, the mean number of chronic conditions by state varies from 1.9 to 3.3 and the percentage aged 85 and older ranges from 20% to 47% of the study population. The large variation in potentially avoidable hospitalizations suggests that there is room for improvement in hospitalization rates for these conditions.

Sixth, state policy variables affect the rate of potentially avoidable hospitalizations in the HCBS population. Although some of our findings are not consistent with those of previous researchers (e.g., the impact of bed hold policies, Intrator et al., 2007), our multivariate analysis demonstrates that HCBS waiver enrollees in states spending a higher proportion of their long-term care dollars on HCBS (an indicator of a better developed HCBS program) and with personal care services were at less risk of potentially avoidable hospitalizations compared to states without a personal care option or spending a smaller proportion of their LTC dollars on HCBS. However, interventions that might make a difference in potentially avoidable hospitalization rates, such as improving quality of care in long-term care settings, expanding the scope or service levels of HCBS programs, or providing personal care services, require additional expenditures by state Medicaid programs in order to yield cost savings to the Medicare program.

Many unmeasured factors could contribute to these differences across states. Financial, legal, and regulatory incentives favoring hospitalization may vary by state. These factors include nursing home staffing levels and capabilities, and the availability of primary care physicians, nurse practitioners, and physician assistants (Ouslander et al., 2010).

Seventh, there are differences in potentially avoidable hospitalization rates by race/ethnicity in all settings, and these differences persist in the multivariate analyses. Hospitalization rates, hospital length of stay, and hospitalization costs all vary by race and ethnicity, suggesting there may be differences in the health status of black and Hispanic dually eligible beneficiaries in these settings compared to whites that are not captured by the count of comorbid conditions, or they may be in facilities with lower quality of care, as has been found by other researchers (Mor et al., 2004).

Nonwhite dually eligible beneficiaries have higher rates of potentially avoidable hospitalizations compared to whites in all settings, and Hispanic individuals have higher rates from nursing facilities or skilled nursing facility stays, but lower rates for HCBS waivers for all ages and dually eligible beneficiaries aged 65 and over, but not under age 65. Because we did not control for individual states, but only specific state policies and market characteristics, we do not know about interactions between race/ethnicity and specific states. For example, the generosity of state Medicaid programs may be correlated with the proportion of beneficiaries who are black or Hispanic.

7.1 Limitations

Although this study is a major advance in the study of potentially avoidable hospitalization, it has several limitations. Not all hospitalizations for the conditions we identified are avoidable for every beneficiary or in every circumstance. Without additional clinical information, we could not evaluate whether a particular hospitalization was indeed necessary or unavoidable. In addition, other expert clinicians might disagree on the lists we developed.

The data reflect only fee-for-service experience; managed care enrollees are excluded. Thus, no data are available for dually eligible beneficiaries enrolled in either Medicare or Medicaid managed care plans. No data exist for Arizona, because 91% of their dually eligible beneficiaries were enrolled in managed Medicaid long-term care. For states with high managed care penetration (of either Medicare or Medicaid managed care), systematic differences may occur between the fee-for-service and managed care populations. In addition, the lack of data about managed care utilization patterns precluded comparisons in potentially avoidable hospitalization rates between fee-for-service and managed care, and between different types of managed care plans such as Medicare Advantage, PACE, and Special Needs Plans (SNPs).

Not all dually eligible beneficiaries are included in this analysis. Full benefit dually eligible beneficiaries with breaks in their dual Medicare and Medicaid eligibility were excluded to reduce complexity in analyzing the service utilization patterns. However, less than 3% of our study population was excluded by this requirement. In the multivariate analyses, we further restricted the sample to individuals whose HCBS, Medicaid-covered nursing facility stays, or Medicare-covered skilled nursing facility stays began in 2005. The experience of those dually eligible beneficiaries whose stays began prior to 2005 was excluded because of the statistical limitations associated with left truncation using hazard models. Additionally, some of the variables used in multivariate analyses were measured imperfectly or resulted in dropping some observations. For example, anomalies in the staffing data (e.g., rates that were too high or too low to be credible) resulting in dropping some facilities from the analysis. In addition, we calculated per diem rates from the claims, an imperfect approach because it did not take into account crossover claims (for Medicare-covered skilled nursing facility stays) or beneficiary contributions to the cost of care (for Medicaid-covered nursing facility stays).

Finally, state data were incomplete. As a result, several states were omitted completely from the study. Maine was excluded from all analyses because the state did not submit Medicaid claims data in 2005. New York, Washington, and Wisconsin were excluded from the HCBS waiver enrollee analyses because MAX data for these states did not report waiver enrollments. In addition, we were unable to evaluate rates separately by waiver type (e.g., aged, disabled, or aged/disabled) as we found inconsistencies between the MAX-generated enrollment data by waiver type and the data reported by states on the CMS Form 372 as reported by the Center for Personal Assistance Services operated by the University of California, San Francisco. As a result, we reported the rates based on enrollment in any aged, disabled or aged/disabled HCBS waiver together.

Medicare/Medicaid dually eligible beneficiaries are an important component of the two programs, accounting for a disproportionate amount of expenditures and a medically complex population. This is particularly true of beneficiaries who use Medicaid nursing facility care,

Medicare skilled nursing facility care, and Medicaid HCBS waivers. This study demonstrates that this population has a high rate of hospitalizations and of potentially avoidable hospitalizations, suggesting that care can be improved and costs lowered for this population. The finding also quantifies the starkly different financial incentives of the federally administered and financed Medicare program and the state-administered and partly state-financed Medicaid program.

REFERENCES

AHRQ's Prevention Quality Indicators (PQIs)

At http://www.qualityindicators.ahrq.gov/pqi_overview.htm (accessed February 2010).

Billings, J., Zeitel, L., Lukomnik, J., Carey, T. S., Blank, A. E., and Newman, L.: Impact of socioeconomic status on hospital use in New York City. Health Aff (Millwood) 12(1):162-173, 1993.

Blustein, J., Hanson, K., and Shea, S.: Preventable hospitalizations and socioeconomic status. Health Affairs 17(2):177-189, 1998.

Carter, M.W.: Factors associated with ambulatory care--sensitive hospitalizations among nursing home residents. J Aging Health 15(2): 295-331, 2003.

Carter, M.W., and Porell, F.W.: Variations in hospitalization rates among nursing home residents: the role of facility and market attributes. Gerontologist 43(2):175-191, 2003.

Cleves, M., Gould, W., and Gutierrez, R.: An introduction to survival analysis using Stata. Stata Corp., 2008.

Freiman, M.P., and Murtaugh, C.M.: The determinants of the hospitalization of nursing home residents. J Health Econ 12(3):349-359, 1993.

Freiman, M.P., and Murtaugh, C.M.: Interactions between hospital and nursing home use. Public Health Rep 110(5):546-554, 1995.

Grabowski, D.C., O'Malley, A.J., and Barhydt, N.R.: The costs and potential savings associated with nursing home hospitalizations. Health Aff (Millwood) 26(6):1753-1761, 2007.

Hendrickson, L., & Kyzr-Sheeley, G. Determining Medicaid Nursing Home Eligibility: A Survey of State Level of Care Assessment. Prepared by Rutgers Center for State Health Policy and Concentric Solutions Corporation. New Brunswick, NJ, Rutgers CSHP/NASHP: Community Living Exchange, March 2008.

Inrator, O., Grabowski, D.C., Zinn, J., Schleinitz, M., Feng, Z., Miller, S., et al.: Hospitalization of nursing home residents: the effects of states' Medicaid payment and bed-hold policies. Health Serv Res 42(4):1651-1671, 2007.

Inrator, O., Schleinitz, M., Grabowski, D.C., Zinn, J., and Mor, V.: Maintaining continuity of care for nursing home residents: effect of states' Medicaid bed-hold policies and reimbursement rates. Health Serv Res 44(1):33-55, 2009.

Kane, R., Keckhafer, G., Flood, S., Bershadsky, B., and Siadat, M.: The effect of Evercare on hospital use. J Am Geriatr Soc 51:1427-1434, 2003.

Kaiser Commission on Medicaid Facts. Dual Eligibles: Medicaid's Role for Low-Income Medicare Beneficiaries, February 2009. Accessed at http://www.kff.org/medicaid/upload/4091_06.pdf

Kaiser Commission on Medicaid Facts. Dual Eligibles: Medicaid's Role for Low-Income Medicare Beneficiaries, January 2004. Accessed at <http://www.kff.org/medicaid/upload/Dual-Eligibles-Medicaid-s-Role-for-Low-Income-Medicare-Beneficiaries-Fact-Sheet-2.pdf>

Kaiser Family Foundation: Medicaid Benefits: Online Database, 2006.

McCall, N., Brody, E., Mobley, L., and Subramanian, S.: Investigation of Increasing Rates of Hospitalization for Ambulatory Care Sensitive Conditions (Avoidable Hospitalizations) Among Medicare Beneficiaries. Final Report to CMS, 2004.

Millman, M.: Access to health care in America. National Academies Press, 1993.

Mor, V., Zinn, J., Angelelli, J., Teno, J.M., and Miller, S.C.: Driven to tiers: socioeconomic and racial disparities in the quality of nursing home care. Milbank Q. 82:227-56, 2004.

Ouslander, J., Lamb, G., Perloe, M., Givens, J., Kluge, L., Rutland, T., et al.: Potentially avoidable hospitalizations of nursing home residents: frequency, causes, and costs [See editorial comments by Drs. Jean F. Wyman and William R. Hazzard, pp 760–761]. J Am Geriatr Soc 58(4):627-635, 2010.

Saliba, D., Kington, R., Buchanan, J., Bell, R., Wang, M., Lee, M., et al.: Appropriateness of the decision to transfer nursing facility residents to the hospital. J Am Geriatr Soc 48(2):154-163, 2000.

Sands, L.P., Wang, Y., McCabe, G.P., Jennings, K., Eng, C., and Covinsky, K. E.: Rates of acute care admissions for frail older people living with met versus unmet activity of daily living needs. J Am Geriatr Soc 54(2):339-344, 2006.

Verdier, J.M.: Coordinating and improving care for dual eligibles in nursing facilities: Current obstacles and pathways to improvement. Available at: http://www.mathematica-mpr.com/publications/pdfs/health/nursing_facility_dualeligibles.pdf. Retrieved July 26, 2010. Princeton, NJ: Mathematica Policy Research, Inc., 2010.

Walsh, E.: Design of Evaluation Options of the System Change Grants. Waltham, MA, RTI International, 2006.

Walsh, E.G., Greene, A.M., and Kaganova, Y.: Design of Evaluation Options Of The System Change Grants. Final Report prepared for Centers for Medicare & Medicaid Services, Dec. 2006.

Weissman, J.S., Gatsonis, C., and Epstein, A.M.: Rates of avoidable hospitalization by insurance status in Massachusetts and Maryland. JAMA 268(17):2388-2394, 1992.

Wiener, J.M., Anderson, W.L., and Khatutsky, G.: Do home and community-based services reduce other Medicaid spending? Prepared for Centers for Medicare & Medicaid Services, Nov. 2008.

**APPENDIX A:
CONDITIONS ASSOCIATED WITH POTENTIALLY AVOIDABLE
HOSPITALIZATIONS USED IN PREVIOUS STUDIES**

A number of articles have utilized lists of categories of hospitalizations related to the concept of potentially avoidable hospitalizations. However, much of this research has simply adopted lists that were created by other researchers.

This appendix provides the source lists that have been used in this body of research, presented in reverse chronological order. Some additional information (often copied directly from the source articles or reports) is also presented for many of these lists.

From the RFP and Q&A for this contract:

Andrew Kramer, MD, and colleagues at the University of Colorado developed a definition of potentially avoidable hospitalizations that includes the ICD-9 codes below. A composite measure of potentially avoidable hospitalization for any of the six conditions was constructed using primary or secondary diagnosis.

- **Congestive Heart Failure (CHF):** Includes ICD-9 codes 398.91 and 428.xx (congestive rheumatic heart failure and heart failure)
- **Electrolyte Imbalance (EI):** Includes ICD-9 codes 276.xx (fluid, electrolyte and acid-base balance)
- **Respiratory Infection (RI):** Includes ICD-9 codes 466.0, 480.xx–487.x, and 507.0 (acute bronchitis, pneumonia, influenza and pneumonitis due to inhalation of food or vomitus)
- **Sepsis:** Includes ICD-9 codes 038.xx (septicemia)
- **Urinary Tract Infection (UTI):** Includes ICD-9 codes 590.xx, 595.0, 595.1, 595.2, 595.4, 595.89, 595.9, 597.0, 598.0x, 599.0, and 601.x (kidney infections, cystitis, urethritis, urethral stricture and inflammatory prostate)
- **Anemia:** Includes ICD-9 codes 280.x, 281.x, 285.1, and 285.29 (iron deficiency, other deficiency, acute posthemorrhagic and other chronic illness)

Results of Technical Expert Panel meeting on developing quality measures for public reporting, October 2009. MIDS—Nursing Home Quality CMS contract #HHSM-500-2008-000211.

As part of this contract, a technical expert panel met in October 2009, to review potential new nursing home quality measures for public reporting. The group discussed approaches to identifying potentially avoidable hospitalizations and rehospitalizations. The TEP members included geriatricians, nursing home industry representatives, researchers, and advocates. In lieu of the term “potentially avoidable hospitalizations,” the group reached consensus on the term **“conditions amenable to early identification and intervention”** to indicate conditions that nursing facility staff should be able to address without requiring a hospital stay. They determined the following list of conditions as appropriate for this category:

- congestive heart failure,
- urinary tract infection,
- respiratory infection,
- electrolyte imbalance,
- dehydration,
- anticoagulant management, and
- delirium.

Georgia Medical Care Foundation. FINAL REPORT. Reducing Avoidable Hospitalizations of Nursing Home Residents: A Center for Medicare and Medicaid Services Special Study, Revised February 4, 2008, Centers for Medicare & Medicaid Services (CMS) Contract # APP-PSS614 Deliverable # 16, Publication No. 8SOW-GA-NHSS-07-34.

An Expert Panel consisting of national and Georgia experts in gerontology and long-term care was convened. The structured implicit review (SIR) process was used by panel members to rate admissions as either necessary, or potentially avoidable, with careful identification of the reason(s) for the ratings. Dr. Debra Saliba, who developed the (SIR) process and served as principal investigator of a study on appropriateness of hospitalization of NH residents in Los Angeles, served as a consultant and worked with the study team to refine the SIR and its training manual.

Table A-1 presents the results of detailed reviews of causes of hospitalization that were done on 161 of the total sample of 200 hospitalizations. Of these 161, 105 (65%) were rated as definitely or probably avoidable. Therefore, **this table is not a list of diagnoses that were used to determine potentially avoidable hospitalizations, but rather the diagnoses that resulted from their structured implicit review process.**

**Table A-1
Admitting diagnoses for potentially avoidable hospitalizations**

Hospital admitting diagnosis ¹	Frequency (N = 105)
Cardiovascular (mainly congestive heart failure and chest pain)	22 (21%)
Respiratory (mainly pneumonia and bronchitis)	21 (20%)
Mental status change/neurological	13 (12%)
Urinary tract infection	11 (11%)
Sepsis/fever	8 (8%)
Skin (cellulitis, infected wound or pressure ulcer)	8 (8%)
Dehydration and/or metabolic disturbance	7 (7%)
Gastrointestinal (bleeding, diarrhea)	7 (7%)
Musculoskeletal pain and/or fall	3 (3%)
Psychiatric	1 (1%)
Other (adverse drug effect, surgical consult)	2 (2%)

¹ When there were multiple primary admitting diagnoses, the diagnosis that most closely related to the nursing home resident's presenting symptoms was selected as the admitting diagnosis.

AHRQ's Prevention Quality Indicators (PQIs)

At http://www.qualityindicators.ahrq.gov/pqi_overview.htm (accessed February 2010)

The Prevention Quality Indicators (PQIs) are a set of measures that can be used with hospital inpatient discharge data to identify quality of care for ambulatory care-sensitive conditions. These are conditions for which good outpatient care can potentially prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease.

The PQIs represent hospital admission rates for the following 14 ambulatory care sensitive conditions:

1. diabetes, short-term complications (PQI 1),
2. perforated appendicitis (PQI 2),
3. diabetes, long-term complications (PQI 3),
4. chronic obstructive pulmonary disease (PQI 5),
5. hypertension (PQI 7),
6. congestive heart failure (PQI 8),
7. low birth weight (PQI 9),
8. dehydration (PQI 10),
9. bacterial pneumonia (PQI 11),
10. urinary infections (PQI 12),
11. angina without procedure (PQI 13),
12. uncontrolled diabetes (PQI 14),
13. adult asthma (PQI 15), and
14. lower extremity amputations among patients with diabetes (PQI 16).

McCall, N.T., Brody, E., Mobley, L., & Subramanian, S. (2004). Investigation of increasing rates of hospitalization for ambulatory care sensitive conditions among Medicare fee-for-service beneficiaries. Final Report prepared for Centers for Medicare & Medicaid Services.

This report summarized research findings from an investigation of increasing rates of hospitalization for 11 ambulatory care sensitive conditions among Medicare fee-for-service (FFS) beneficiaries. The conditions were:

1. cellulitis,
2. asthma,
3. chronic obstructive pulmonary disease (COPD),
4. congestive heart failure (CHF),
5. dehydration,
6. pneumonia,
7. septicemia,
8. stroke,
9. urinary tract infection (UTI),
10. acute diabetic events, and
11. lower limb peripheral vascular disease (PVD).

Billings, J., Zeitel, L., Lukomnik, J., Carey, T.S., Blank, A.E., & Newman, L. (1993). Impact of socioeconomic status on hospital use in New York City. Health Aff Spring:162-173.

A medical advisory panel of six internists and pediatricians, including national and local experts on the provision of care to the medically indigent and the problems associated with access barriers, was formed to develop a diagnostic framework for analyzing hospital use patterns. Using a modified Delphi approach, the panel defined three basic categories for grouping causes of hospital admission, One of these categories is ambulatory care sensitive (ACS) conditions—diagnoses for which timely and effective outpatient care can help to reduce the risks of hospitalization by either preventing the onset of an illness or condition, controlling an acute episodic illness or condition, or managing a chronic disease or condition. The methodology is presented in the following text and in **Tables A-2** and **A-3**.

ACS Condition and ICD-9-CM Code(s)

Where only three digits are listed, all diagnoses at the 4th and 5th digit should be included (e.g., asthma is listed as 493, but you should include 493.0, 493.00, 493.01, 493.1, 493.10, 493.11, etc.). Where only four digits are listed, all diagnoses at the 5th digit should also be included.

All diagnoses refer to principal diagnosis, unless otherwise specified (e.g., dehydration, iron deficiency, nutritional deficiency, etc.). Where exclusions of surgical patients are specified (e.g., hypertension), search all procedure fields for excluded procedures.

Table A-2
Ambulatory care sensitive conditions—Billings et al. (1993)

Diagnosis	Comments
Congenital syphilis [090]	Secondary diagnosis for newborns only
Immunization-related and preventable conditions [033, 037, 045, 320.0, 390, 391]	Hemophilus meningitis [320.2] age 1–5 only
Grand mal status and other epileptic convulsions [345]	
Convulsions “A” [780.3]	Age 0–5
Convulsions “B” [780.3]	Age >5
Severe ENT infections [382, 462, 463, 465, 472.1]	Exclude otitis media cases [382] with myringotomy with insertion of tube [20.01]
Pulmonary tuberculosis [011]	
Other tuberculosis [012–018]	
Chronic obstructive pulmonary disease [491, 492, 494, 496, 466.0]	Acute bronchitis [466.0] only with secondary diagnosis of 491, 492, 494, 496

(continued)

Table A-2
Ambulatory care sensitive conditions—Billings et al. (1993) (continued)

Diagnosis	Comments
Bacterial pneumonia [481, 482.2, 482.3, 482.9, 483, 485, 486]	Exclude case with secondary diagnosis of sickle cell [282.6] and patients <2 months
Asthma [493]	
Congestive heart failure [428, 402.01, 402.11, 402.91, 518.4]	Exclude cases with the following surgical procedures: 36.01, 36.02, 36.05, 36.1, 37.5, or 37.7
Hypertension [401.0, 401.9, 402.00, 402.10, 402.90]	Exclude cases with the following procedures: 36.01, 36.02, 36.05, 36.1, 37.5, or 37.7
Angina [411.1, 411.8, 413]	Exclude cases with a surgical procedure [01-86.99]
Cellulitis [681, 682, 683, 686]	Exclude cases with a surgical procedure [01-86.99], except incision of skin and subcutaneous tissue [86.0] where it is the only listed surgical procedure
Skin grafts with cellulitis [DRG 263, DRG 264]	Exclude admissions from SNF/ICF
Diabetes “A” [250.1, 250.2, 250.3]	
Diabetes “B” [250.8, 250.9]	
Diabetes “C” [250.0]	
Hypoglycemia [251.2]	
Gastroenteritis [558.9]	
Kidney/urinary infection [590, 599.0, 599.9]	
Dehydration—volume depletion [276.5]	Examine principal and secondary diagnoses separately
Iron deficiency anemia [280.1, 280.8, 280.9]	Age 0–5 only, and examine principal and secondary diagnoses separately
Nutritional deficiencies [260, 261, 262, 268.0, 268.1]	Examine principal and secondary diagnoses separately
Failure to thrive [783.4]	Age <1 only
Pelvic inflammatory disease [614]	Women only denominator—exclude cases with a surgical procedure of hysterectomy [68.3–68.8]
Dental conditions [521, 522, 523, 525, 528]	—

Millman, M. L. (Ed.) (1993). Access to health care in America. Committee on Monitoring Access to Personal Health Care Services. Institute of Medicine. Washington, DC: National Academy Press.

Table A-3
Ambulatory care sensitive conditions

Medical condition	ICD-9-CM
Immunization-preventable conditions	033, 037, 390, 391, 320.0
Congenital syphilis	090
Grand mal seizure disorders	345, 780.3
Severe ear, nose, and throat infections	382, 462, 463, 465, 472.1
Tuberculosis	011-018
Chronic obstructive pulmonary disease	466, 491, 492, 494, 496
Bacterial pneumonia	468, 481, 482.2, 482.3, 482.9, 483
Asthma	493
Congestive heart failure	428, 518.4
Hypertension	401.0, 401.9, 402.0, 402.1, 402.9
Angina	411.1, 411.8, 413
Cellulitis	681, 682, 683, 686
Diabetes wit ketoacidosis or hypersmolar coma	250.1-250.3
Diabetes with specified manifestations	250.8, 250.9
Diabetes without specified complications	250.0
Hypoglycemia	251.2
Gastroenteritis	588.8
Kidney/urinary tract infection	590, 599.0, 599.9
Dehydration	276.5
Iron deficiency anemia	280.1, 280.8, 280.9
Nutritional deficiency	260-262, 268.0, 268.1
Failure to thrive	783.4
Pelvic inflammatory disease	614
Dental conditions	521-523, 525, 528

Source: Millman 1993.

Carter, M. W. (2003a). Factors associated with ambulatory care-sensitive hospitalizations among nursing home residents. Journal of Aging and Health. 15(2):295–331.

In her use of this list, Carter made two small modifications:

However, following the approach of (Blustein, Hanson et al. 1998), pneumonia and congestive heart failure were not included among the conditions identified as indicating an ACSH. Although potentially limiting the number of actual ACSHs identified, the more conservative approach limits the chances of falsely including hospitalizations occurring from unavoidable, degenerative disease processes in the frail elderly population.

The reason stated for these exclusions is that “when presented in advanced-aged patients, these conditions may not necessarily be indicative of ambulatory care problems.”

Weissman, J. S., Gatsonis, C., & Epstein, A. M. (1992). Rates of avoidable hospitalization by insurance status in Massachusetts and Maryland. Journal of the American Medical Association 268(17):2388–2394.

The authors used a literature review and clinical guidance from physicians to select Avoidable Hospital Conditions (see **Table A-4**).

Table A-4
Avoidable hospital conditions, ICD-9-CM* codes, and admission rates for patients under 65 years of age, 1987

Conditions	ICD-9-CM codes	Admission rates** Massachusetts	Admission rates** Maryland
Ruptured appendix	540.0, 540.1	2.79	2.14
Asthma	493	20.78	17.69
Cellulitis	681, 682	11.25	8.68
Congestive heart failure	428, 402.01, 402.11, 402.91	5.58	6.14
Diabetes	250.1, 250.2, 250.3, 251.0	3.02	3.99
Gangrene	785.4	0.26	0.23
Hypokalemia	276.8	0.27	0.31
Immunizable conditions	032, 033, 037, 072, 045, 055	0.07	0.04
Malignant hypertension	401.0, 402.0, 403.0, 404.0, 405.0, 437.2	0.84	1.64
Pneumonia	481, 482, 483, 485, 486	14.72	14.92
Pyelonephritis	590.0, 590.1, 590.8	3.78	4.11
Perforated or bleeding ulcer	531.0, 531.2, 531.4, 531.6, 532.0, 532.2, 532.4, 532.6, 533.0, 533.1, 533.2, 533.4, 533.5, 533.6	2.49	2.47

* ICD-9-CM indicates International Classification of Diseases, Ninth Revision, Clinical Modification.

** Per 10,000 study population under the age of 65 years with private insurance, Medicaid, or no insurance.

**APPENDIX B:
CONDITIONS AND ICD-9 CODES ASSOCIATED WITH POTENTIALLY
AVOIDABLE HOSPITALIZATIONS FROM NURSING FACILITIES, SKILLED
NURSING FACILITIES, AND HOME AND COMMUNITY-BASED WAIVER
PROGRAMS**

Table B-1
Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers

ICD9-Code	ICD-9 LB
Altered mental status/acute confusion/delirium 290.3	Senile delirium
290.41	Vasc dementia w delirium
292.81	Drug-induced delirium
293.0	Delirium d/t other cond
293.1	Subacute delirium
Anemia	
280.0	Chr blood loss anemia
280.1	Iron def anemia dietary
280.8	Iron defic anemia NEC
280.9	Iron defic anemia NOS
281.0	Pernicious anemia
281.1	B12 defic anemia NEC
281.2	Folate-deficiency anemia
281.3	Megaloblastic anemia NEC
281.4	Protein defic anemia
281.8	Nutritional anemia NEC
281.9	Deficiency anemia NOS
285.21	Anemia in chr kidney dis
285.22	Anemia in neoplastic dis
285.29	Anemia-other chronic dis
285.9	Anemia NOS
Congestive heart failure	
398.91	Rheumatic heart failure
402.11	Benign hyp ht dis w hf
402.91	Hyp ht dis NOS w ht fail
404.11	Ben hyp ht/kd I-IV w hf
404.13	Ben hyp ht/kd stg V w hf
404.91	Hyp ht/kd NOS I-IV w hf
404.93	Hyp ht/kd NOS st V w hf
428.0	CHF NOS
428.1	Left heart failure
428.20	Systolic hrt failure NOS

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
428.21	Ac systolic hrt failure
428.22	Chr systolic hrt failure
428.23	Ac on chr syst hrt fail
428.30	Diastolic hrt failure NOS
428.31	Ac diastolic hrt failure
428.32	Chr diastolic hrt fail
428.33	Ac on chr diast hrt fail
428.40	Syst/diast hrt fail NOS
428.41	Ac syst/diastol hrt fail
428.42	Chr syst/diastl hrt fail
428.43	Ac/chr syst/dia hrt fail
428.9	Heart failure NOS
518.4	Acute lung edema NOS
Hypertension	
401.9	Hypertension NOS
402.10	Benign hyp ht dis w/o hf
402.90	Hyp hrt dis NOS w/o hf
403.10	Ben hy kid w cr kid I-IV
403.90	Hy kid NOS w cr kid I-IV
404.10	Ben hy ht/kd I-IV w/o hf
404.90	Hy ht/kd NOS I-IV w/o hf
Hypotension	
458.0	Orthostatic hypotension
458.1	Chronic hypotension
458.21	Hemodialysis hypotensn
458.29	Iatrogenic hypotnsion NEC
458.8	Hypotension NEC
458.9	Hypotension NOS
Poor glycemic control	
250.02	DMII wo cmp uncntrld
250.03	DMI wo cmp uncntrld
250.10	DMII keto nt st uncntrld

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
250.11	DMI keto nt st uncntrld
250.12	DMII ketoacd uncontrold
250.13	DMI ketoacd uncontrold
250.20	DMII hprsm nt st uncntrl
250.21	DMI hprsm nt st uncntrld
250.22	DMII hprosmrlr uncontrold
250.23	DMI hprosmrlr uncontrold
250.30	DMII o cm nt st uncntrld
250.31	DMI o cm nt st uncntrld
250.32	DMII oth coma uncontrold
250.33	DMI oth coma uncontrold
251.0	Hypoglycemic coma
251.2	Hypoglycemia NOS
790.29	Abnormal glucose NEC
Dehydration, volume depletion	
276.5	Hypovolemia
276.8	Hypopotassemia
Hyponatremia	
276.1	Hyposmolality
Acute renal failure	
584.5	Ac kidney fail, tubr necr
584.6	Ac kidney fail, cort necr
584.7	Ac kidney fail, medu necr
584.8	Acute kidney failure NEC
584.9	Acute kidney failure NOS
588.81	Sec hyperparathyrd-renal
588.89	Impair ren funct dis NEC
588.9	Impaired renal funct NOS
Constipation/fecal impaction/obstipation	
560.39	Impaction intestine NEC
564.00	Constipation NOS
564.01	Slow transt constipation
564.09	Constipation NEC

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
Diarrhea and gastroenteritis	
003.0	Salmonella enteritis
004.0	Shigella dysenteriae
004.1	Shigella flexneri
004.2	Shigella boydii
004.3	Shigella sonnei
004.8	Shigella infection NEC
004.9	Shigellosis NOS
005.0	Staph food poisoning
005.1	Botulism food poisoning
005.2	Food pois d/t c. perfrin
005.3	Food pois: clostrid NEC
005.4	Food pois: v. parahaem
005.81	Food poisn d/t v. vulnif
005.89	Bact food poisoning NEC
005.9	Food poisoning NOS
006.0	Ac amebiasis w/o abscess
007.0	Balantidiasis
007.1	Giardiasis
007.2	Coccidiosis
007.3	Intest trichomoniasis
007.4	Cryptosporidiosis
007.5	Cyclosporiasis
007.8	Protozoal intest dis NEC
007.9	Protozoal intest dis NOS
008.00	Intest infec e coli NOS
008.01	Int inf e coli entrpath
008.02	Int inf e coli entrtoxgn
008.03	Int inf e coli entrnsv
008.04	Int inf e coli enthrmrg
008.09	Int inf e coli spcf NEC
008.1	Arizona enteritis

(continued)

Table B-1 (continued)
Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers

ICD9Code	ICD9LB
008.2	Aerobacter enteritis
008.3	Proteus enteritis
008.41	Staphylococc enteritis
008.42	Pseudomonas enteritis
008.43	Int infec campylobacter
008.44	Int inf yrsnia entrctca
008.46	Intes infec oth anerobes
008.47	Int inf oth grm neg bctr
008.49	Bacterial enteritis NEC
008.5	Bacterial enteritis NOS
008.61	Intes infec rotavirus
008.62	Intes infec adenovirus
008.63	Int inf norwalk virus
008.64	Int inf oth sml rnd vrus
008.65	Enteritis d/t calicivirs
008.66	Intes infec astrovirus
008.67	Int inf enterovirus NEC
008.69	Other viral intes infec
008.8	Viral enteritis NOS
009.0	Infectious enteritis NOS
009.1	Enteritis of infect orig
009.2	Infectious diarrhea NOS
009.3	Diarrhea of infect orig
558.9	Noninf gastroenterit NEC
787.91	Diarrhea
C. Difficile 008.45	Int inf clstridium dfcile
Cellulitis 681.00	Cellulitis, finger NOS
681.01	Felon
681.02	Onychia of finger
681.10	Cellulitis, toe NOS
681.11	Onychia of toe

(continued)

Table B-1 (continued)
Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers

ICD9Code	ICD9LB
681.9	Cellulitis of digit NOS
682.0	Cellulitis of face
682.1	Cellulitis of neck
682.2	Cellulitis of trunk
682.3	Cellulitis of arm
682.4	Cellulitis of hand
682.5	Cellulitis of buttock
682.6	Cellulitis of leg
682.7	Cellulitis of foot
682.8	Cellulitis, site NEC
682.9	Cellulitis NOS
683.	Acute lymphadenitis
686.00	Pyoderma NOS
686.01	Pyoderma gangrenosum
686.09	Pyoderma NEC
686.1	Pyogenic granuloma
686.8	Local skin infection NEC
686.9	Local skin infection NOS
Skin ulcers	
707.00	Pressure ulcer, site NOS
707.01	Pressure ulcer, elbow
707.02	Pressure ulcer, upr back
707.03	Pressure ulcer, low back
707.04	Pressure ulcer, hip
707.05	Pressure ulcer, buttock
707.06	Pressure ulcer, ankle
707.07	Pressure ulcer, heel
707.09	Pressure ulcer, site NEC
707.10	Ulcer of lower limb NOS
707.11	Ulcer of thigh
707.12	Ulcer of calf
707.13	Ulcer of ankle
707.14	Ulcer of heel & midfoot

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
707.15	Ulcer other part of foot
707.19	Ulcer oth part low limb
707.8	Chronic skin ulcer NEC
707.9	Chronic skin ulcer NOS
Lower respiratory: pneumonia & bronchitis	
480.0	Adenoviral pneumonia
480.1	Resp syncyt viral pneum
480.2	Parinfluenza viral pneum
480.3	Pneumonia due to SARS
480.8	Viral pneumonia NEC
480.9	Viral pneumonia NOS
481.	Pneumococcal pneumonia
482.0	K. pneumoniae pneumonia
482.1	Pseudomonal pneumonia
482.2	H.influenzae pneumonia
482.30	Streptococcal pneumn NOS
482.31	Pneumonia strptococcus a
482.32	Pneumonia strptococcus b
482.39	Pneumonia oth strep
482.40	Staphylococcal pneu NOS
482.41	Meth sus pneum d/t Staph
482.49	Staph pneumonia NEC
482.81	Pneumonia anaerobes
482.82	Pneumonia e coli
482.83	Pneumo oth grm-neg bact
482.84	Legionnaires' disease
482.89	Pneumonia oth spcf bact
482.9	Bacterial pneumonia NOS
483.0	Pneu mycplsm pneumoniae
483.1	Pneumonia d/t chlamydia
483.8	Pneumon oth spec orgnsm
485.	Bronchopneumonia org NOS
486.	Pneumonia, organism NOS

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
507.0	Food/vomit pneumonitis
UTI	
590.10	Ac pyelonephritis NOS
590.11	Ac pyelonephr w med necr
590.80	Pyelonephritis NOS
590.81	Pyelonephrit in oth dis
590.9	Infection of kidney NOS
595.0	Acute cystitis
595.1	Chr interstit cystitis
595.2	Chronic cystitis NEC
595.4	Cystitis in oth dis
595.89	Cystitis NEC
595.9	Cystitis NOS
597.0	Urethral abscess
598.00	Urethr strict:infect NOS
598.01	Ureth strict:oth infect
599.0	Urin tract infection NOS
601.0	Acute prostatitis
601.1	Chronic prostatitis
601.2	Abscess of prostate
601.3	Prostatocystitis
601.4	Prostatitis in oth dis
601.8	Prostatic inflam dis NEC
601.9	Prostatitis NOS
Falls and trauma	
800.00	Closed skull vault fx
800.01	Cl skull vlt fx w/o coma
800.02	Cl skull vlt fx-brf coma
800.03	Cl skull vlt fx-mod coma
800.04	Cl skl vlt fx-proln coma
800.05	Cl skul vlt fx-deep coma
800.06	Cl skull vlt fx-coma NOS
800.09	Cl skl vlt fx-concus NOS

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
800.10	Cl skl vlt fx/cerebr lac
800.11	Cl skull vlt fx w/o coma
800.12	Cl skull vlt fx-brf coma
800.13	Cl skull vlt fx-mod coma
800.14	Cl skl vlt fx-proln coma
800.15	Cl skul vlt fx-deep coma
800.16	Cl skull vlt fx-coma NOS
800.19	Cl skl vlt fx-concus NOS
800.20	Cl skl vlt fx/mening hem
800.21	Cl skull vlt fx w/o coma
800.22	Cl skull vlt fx-brf coma
800.23	Cl skull vlt fx-mod coma
800.24	Cl skl vlt fx-proln coma
800.25	Cl skul vlt fx-deep coma
800.26	Cl skull vlt fx-coma NOS
800.29	Cl skl vlt fx-concus NOS
800.30	Cl skull vlt fx/hem NEC
800.31	Cl skull vlt fx w/o coma
800.32	Cl skull vlt fx-brf coma
800.33	Cl skull vlt fx-mod coma
800.34	Cl skl vlt fx-proln coma
800.35	Cl skul vlt fx-deep coma
800.36	Cl skull vlt fx-coma NOS
800.39	Cl skl vlt fx-concus NOS
800.40	Cl skl vlt fx/br inj NEC
800.41	Cl skull vlt fx w/o coma
800.42	Cl skull vlt fx-brf coma
800.43	Cl skull vlt fx-mod coma
800.44	Cl skl vlt fx-proln coma
800.45	Cl skul vlt fx-deep coma
800.46	Cl skull vlt fx-coma NOS
800.49	Cl skl vlt fx-concus NOS
800.50	Opn skull vault fracture

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
800.51	Opn skul vlt fx w/o coma
800.52	Opn skul vlt fx-brf coma
800.53	Opn skul vlt fx-mod coma
800.54	Opn skl vlt fx-proln com
800.55	Opn skl vlt fx-deep coma
800.56	Opn skul vlt fx-coma NOS
800.59	Op skl vlt fx-concus NOS
800.60	Opn skl vlt fx/cereb lac
800.61	Opn skul vlt fx w/o coma
800.62	Opn skul vlt fx-brf coma
800.63	Opn skul vlt fx-mod coma
800.64	Opn skl vlt fx-proln com
800.65	Opn skl vlt fx-deep coma
800.66	Opn skul vlt fx-coma NOS
800.69	Op skl vlt fx-concus NOS
800.70	Opn skl vlt fx/menin hem
800.71	Opn skul vlt fx w/o coma
800.72	Opn skul vlt fx-brf coma
800.73	Opn skul vlt fx-mod coma
800.74	Opn skl vlt fx-proln com
800.75	Opn skl vlt fx-deep coma
800.76	Opn skul vlt fx-coma NOS
800.79	Op skl vlt fx-concus NOS
800.80	Opn skull vlt fx/hem NEC
800.81	Opn skul vlt fx w/o coma
800.82	Opn skul vlt fx-brf coma
800.83	Opn skul vlt fx-mod coma
800.84	Opn skl vlt fx-proln com
800.85	Opn skl vlt fx-deep coma
800.86	Opn skul vlt fx-coma NOS
800.89	Op skl vlt fx-concus NOS
800.90	Op skl vlt fx/br inj NEC
800.91	Opn skul vlt fx w/o coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
800.92	Opn skul vlt fx-brf coma
800.93	Opn skul vlt fx-mod coma
800.94	Opn skl vlt fx-proln com
800.95	Op skul vlt fx-deep coma
800.96	Opn skul vlt fx-coma NOS
800.99	Op skl vlt fx-concus NOS
801.00	Clos skull base fracture
801.01	Cl skul base fx w/o coma
801.02	Cl skul base fx-brf coma
801.03	Cl skul base fx-mod coma
801.04	Cl skl base fx-prol coma
801.05	Cl skl base fx-deep coma
801.06	Cl skul base fx-coma NOS
801.09	Cl skull base fx-concuss
801.10	Cl skl base fx/cereb lac
801.11	Cl skul base fx w/o coma
801.12	Cl skul base fx-brf coma
801.13	Cl skul base fx-mod coma
801.14	Cl skl base fx-prol coma
801.15	Cl skl base fx-deep coma
801.16	Cl skul base fx-coma NOS
801.19	Cl skull base fx-concuss
801.20	Cl skl base fx/menin hem
801.21	Cl skul base fx w/o coma
801.22	Cl skul base fx/brf coma
801.23	Cl skul base fx-mod coma
801.24	Cl skl base fx-prol coma
801.25	Cl skl base fx-deep coma
801.26	Cl skul base fx-coma NOS
801.29	Cl skull base fx-concuss
801.30	Cl skull base fx/hem NEC
801.31	Cl skul base fx w/o coma
801.32	Cl skul base fx-brf coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
801.33	Cl skul base fx-mod coma
801.34	Cl skl base fx-prol coma
801.35	Cl skl base fx-deep coma
801.36	Cl skul base fx-coma NOS
801.39	Cl skull base fx-concuss
801.40	Cl sk base fx/br inj NEC
801.41	Cl skul base fx w/o coma
801.42	Cl skul base fx-brf coma
801.43	Cl skul base fx-mod coma
801.44	Cl skl base fx-prol coma
801.45	Cl skl base fx-deep coma
801.46	Cl skul base fx-coma NOS
801.49	Cl skull base fx-concuss
801.50	Open skull base fracture
801.51	Opn skl base fx w/o coma
801.52	Opn skl base fx-brf coma
801.53	Opn skl base fx-mod coma
801.54	Op skl base fx-prol coma
801.55	Op skl base fx-deep coma
801.56	Opn skl base fx-coma NOS
801.59	Opn skul base fx-concuss
801.60	Op skl base fx/cereb lac
801.61	Opn skl base fx w/o coma
801.62	Opn skl base fx-brf coma
801.63	Opn skl base fx-mod coma
801.64	Op skl base fx-prol coma
801.65	Op skl base fx-deep coma
801.66	Opn skl base fx-coma NOS
801.69	Opn skul base fx-concuss
801.70	Op skl base fx/menin hem
801.71	Opn skl base fx w/o coma
801.72	Opn skl base fx-brf coma
801.73	Opn skl base fx-mod coma

(continued)

Table B-1 (continued)
Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers

ICD9Code	ICD9LB
801.74	Op skl base fx-prol coma
801.75	Op skl base fx-deep coma
801.76	Opn skl base fx-coma NOS
801.79	Opn skul base fx-concuss
801.80	Opn skul base fx/hem NEC
801.81	Opn skl base fx w/o coma
801.82	Opn skl base fx-brf coma
801.83	Opn skl base fx-mod coma
801.84	Op skl base fx-prol coma
801.85	Op skl base fx-deep coma
801.86	Opn skl base fx-coma NOS
801.89	Opn skul base fx-concuss
801.90	Op sk base fx/br inj NEC
801.91	Op skul base fx w/o coma
801.92	Opn skl base fx-brf coma
801.93	Opn skl base fx-mod coma
801.94	Op skl base fx-prol coma
801.95	Op skl base fx-deep coma
801.96	Opn skl base fx-coma NOS
801.99	Opn skul base fx-concuss
802.0	Nasal bone fx-closed
802.1	Nasal bone fx-open
802.20	Mandible fx NOS-closed
802.21	Fx condyl proc mandib-cl
802.22	Subcondylar fx mandib-cl
802.23	Fx coron proc mandib-cl
802.24	Fx ramus NOS-closed
802.25	Fx angle of jaw-closed
802.26	Fx symphy mandib body-cl
802.27	Fx alveolar bord mand-cl
802.28	Fx mandible body NEC-cl
802.29	Mult fx mandible-closed
802.30	Mandible fx NOS-open

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
802.31	Fx condyl proc mand-open
802.32	Subcondyl fx mandib-open
802.33	Fx coron proc mandib-opn
802.34	Fx ramus NOS-open
802.35	Fx angle of jaw-open
802.36	Fx symphy mandib bdy-opn
802.37	Fx alv bord mand bdy-opn
802.38	Fx mandible body NEC-opn
802.39	Mult fx mandible-open
802.4	Fx malar/maxillary-close
802.5	Fx malar/maxillary-open
802.6	Fx orbital floor-closed
802.7	Fx orbital floor-open
802.8	Fx facial bone NEC-close
802.9	Fx facial bone NEC-open
803.00	Close skull fracture NEC
803.01	Cl skull fx NEC w/o coma
803.02	Cl skull fx NEC-brf coma
803.03	Cl skull fx NEC-mod coma
803.04	Cl skl fx NEC-proln coma
803.05	Cl skul fx NEC-deep coma
803.06	Cl skull fx NEC-coma NOS
803.09	Cl skull fx NEC-concuss
803.10	Cl skl fx NEC/cerebr lac
803.11	Cl skull fx NEC w/o coma
803.12	Cl skull fx NEC-brf coma
803.13	Cl skull fx NEC-mod coma
803.14	Cl skl fx NEC-proln coma
803.15	Cl skul fx NEC-deep coma
803.16	Cl skull fx NEC-coma NOS
803.19	Cl skull fx NEC-concuss
803.20	Cl skl fx NEC/mening hem
803.21	Cl skull fx NEC w/o coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
803.22	Cl skull fx NEC-brf coma
803.23	Cl skull fx NEC-mod coma
803.24	Cl skl fx NEC-proln coma
803.25	Cl skul fx NEC-deep coma
803.26	Cl skull fx NEC-coma NOS
803.29	Cl skull fx NEC-concuss
803.30	Cl skull fx NEC/hem NEC
803.31	Cl skull fx NEC w/o coma
803.32	Cl skull fx NEC-brf coma
803.33	Cl skull fx NEC-mod coma
803.34	Cl skl fx NEC-proln coma
803.35	Cl skul fx NEC-deep coma
803.36	Cl skull fx NEC-coma NOS
803.39	Cl skull fx NEC-concuss
803.40	Cl skl fx NEC/br inj NEC
803.41	Cl skull fx NEC w/o coma
803.42	Cl skull fx NEC-brf coma
803.43	Cl skull fx NEC-mod coma
803.44	Cl skl fx NEC-proln coma
803.45	Cl skul fx NEC-deep coma
803.46	Cl skull fx NEC-coma NOS
803.49	Cl skull fx NEC-concuss
803.50	Open skull fracture NEC
803.51	Opn skul fx NEC w/o coma
803.52	Opn skul fx NEC-brf coma
803.53	Opn skul fx NEC-mod coma
803.54	Opn skl fx NEC-prol coma
803.55	Opn skl fx NEC-deep coma
803.56	Opn skul fx NEC-coma NOS
803.59	Opn skull fx NEC-concuss
803.60	Opn skl fx NEC/cereb lac
803.61	Opn skul fx NEC w/o coma
803.62	Opn skul fx NEC-brf coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
803.63	Opn skul fx NEC-mod coma
803.64	Opn skl fx NEC-proln com
803.65	Opn skl fx NEC-deep coma
803.66	Opn skul fx NEC-coma NOS
803.69	Opn skull fx NEC-concuss
803.70	Opn skl fx NEC/menin hem
803.71	Opn skul fx NEC w/o coma
803.72	Opn skul fx NEC-brf coma
803.73	Opn skul fx NEC-mod coma
803.74	Opn skl fx NEC-prol coma
803.75	Opn skl fx NEC-deep coma
803.76	Opn skul fx NEC-coma NOS
803.79	Opn skull fx NEC-concuss
803.80	Opn skull fx NEC/hem NEC
803.81	Opn skul fx NEC w/o coma
803.82	Opn skul fx NEC-brf coma
803.83	Opn skul fx NEC-mod coma
803.84	Opn skl fx NEC-prol coma
803.85	Opn skl fx NEC-deep coma
803.86	Opn skul fx NEC-coma NOS
803.89	Opn skull fx NEC-concuss
803.90	Op skl fx NEC/br inj NEC
803.91	Opn skul fx NEC w/o coma
803.92	Opn skul fx NEC-brf coma
803.93	Opn skul fx NEC-mod coma
803.94	Opn skl fx NEC-prol coma
803.95	Opn skl fx NEC-deep coma
803.96	Opn skul fx NEC-coma NOS
803.99	Opn skull fx NEC-concuss
804.00	Cl skul fx w oth bone fx
804.01	Cl skl w oth fx w/o coma
804.02	Cl skl w oth fx-brf coma
804.03	Cl skl w oth fx-mod coma

(continued)

Table B-1 (continued)
Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers

ICD9Code	ICD9LB
804.04	Cl skl/oth fx-proln coma
804.05	Cl skul/oth fx-deep coma
804.06	Cl skl w oth fx-coma NOS
804.09	Cl skul w oth fx-concuss
804.10	Cl sk w oth fx/cereb lac
804.11	Cl skl w oth fx w/o coma
804.12	Cl skl w oth fx-brf coma
804.13	Cl skl w oth fx-mod coma
804.14	Cl skl/oth fx-proln coma
804.15	Cl skul/oth fx-deep coma
804.16	Cl skl w oth fx-coma NOS
804.19	Cl skul w oth fx-concuss
804.20	Cl skl/oth fx/mening hem
804.21	Cl skl w oth fx w/o coma
804.22	Cl skl w oth fx-brf coma
804.23	Cl skl w oth fx-mod coma
804.24	Cl skl/oth fx-proln coma
804.25	Cl skul/oth fx-deep coma
804.26	Cl skl w oth fx-coma NOS
804.29	Cl skul w oth fx-concuss
804.30	Cl skul w oth fx/hem NEC
804.31	Cl skl w oth fx w/o coma
804.32	Cl skl w oth fx-brf coma
804.33	Cl skl w oth fx-mod coma
804.34	Cl skl/oth fx-proln coma
804.35	Cl skul/oth fx-deep coma
804.36	Cl skl w oth fx-coma NOS
804.39	Cl skul w oth fx-concuss
804.40	Cl skl/oth fx/br inj NEC
804.41	Cl skl w oth fx w/o coma
804.42	Cl skl w oth fx-brf coma
804.43	Cl skl w oth fx-mod coma
804.44	Cl skl/oth fx-proln coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
804.45	Cl skul/oth fx-deep coma
804.46	Cl skl w oth fx-coma NOS
804.49	Cl skul w oth fx-concuss
804.50	Opn skull fx/oth bone fx
804.51	Opn skul/oth fx w/o coma
804.52	Opn skul/oth fx-brf coma
804.53	Opn skul/oth fx-mod coma
804.54	Opn skl/oth fx-prol coma
804.55	Opn skl/oth fx-deep coma
804.56	Opn skul/oth fx-coma NOS
804.59	Opn skull/oth fx-concuss
804.60	Opn skl/oth fx/cereb lac
804.61	Opn skul/oth fx w/o coma
804.62	Opn skul/oth fx-brf coma
804.63	Opn skul/oth fx-mod coma
804.64	Opn skl/oth fx-prol coma
804.65	Opn skl/oth fx-deep coma
804.66	Opn skul/oth fx-coma NOS
804.69	Opn skull/oth fx-concuss
804.70	Opn skl/oth fx/menin hem
804.71	Opn skul/oth fx w/o coma
804.72	Opn skul/oth fx-brf coma
804.73	Opn skul/oth fx-mod coma
804.74	Opn skl/oth fx-prol coma
804.75	Opn skl/oth fx-deep coma
804.76	Opn skul/oth fx-coma NOS
804.79	Opn skull/oth fx-concuss
804.80	Opn skl w oth fx/hem NEC
804.81	Opn skul/oth fx w/o coma
804.82	Opn skul/oth fx-brf coma
804.83	Opn skul/oth fx-mod coma
804.84	Opn skl/oth fx-prol coma
804.85	Opn skl/oth fx-deep coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
804.86	Opn skul/oth fx-coma NOS
804.89	Opn skull/oth fx-concuss
804.90	Op skl/oth fx/br inj NEC
804.91	Opn skul/oth fx w/o coma
804.92	Opn skul/oth fx-brf coma
804.93	Opn skul/oth fx-mod coma
804.94	Opn skl/oth fx-prol coma
804.95	Opn skl/oth fx-deep coma
804.96	Opn skul/oth fx-coma NOS
804.99	Opn skull/oth fx-concuss
805.00	Fx cervical vert NOS-cl
805.01	Fx c1 vertebra-closed
805.02	Fx c2 vertebra-closed
805.03	Fx c3 vertebra-closed
805.04	Fx c4 vertebra-closed
805.05	Fx c5 vertebra-closed
805.06	Fx c6 vertebra-closed
805.07	Fx c7 vertebra-closed
805.08	Fx mult cervical vert-cl
805.10	Fx cervical vert NOS-opn
805.11	Fx c1 vertebra-open
805.12	Fx c2 vertebra-open
805.13	Fx c3 vertebra-open
805.14	Fx c4 vertebra-open
805.15	Fx c5 vertebra-open
805.16	Fx c6 vertebra-open
805.17	Fx c7 vertebra-open
805.18	Fx mlt cervical vert-opn
805.3	Fx dorsal vertebra-open
805.5	Fx lumbar vertebra-open
805.6	Fx sacrum/coccyx-closed
805.7	Fx sacrum/coccyx-open
805.9	Vertebral fx NOS-open

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
806.00	C1-c4 fx-cl/cord inj NOS
806.01	C1-c4 fx-cl/com cord les
806.02	C1-c4 fx-cl/ant cord syn
806.03	C1-c4 fx-cl/cen cord syn
806.04	C1-c4 fx-cl/cord inj NEC
806.05	C5-c7 fx-cl/cord inj NOS
806.06	C5-c7 fx-cl/com cord les
806.07	C5-c7 fx-cl/ant cord syn
806.08	C5-c7 fx-cl/cen cord syn
806.09	C5-c7 fx-cl/cord inj NEC
806.10	C1-c4 fx-op/cord inj NOS
806.11	C1-c4 fx-op/com cord les
806.12	C1-c4 fx-op/ant cord syn
806.13	C1-c4 fx-op/cen cord syn
806.14	C1-c4 fx-op/cord inj NEC
806.15	C5-c7 fx-op/cord inj NOS
806.16	C5-c7 fx-op/com cord les
806.17	C5-c7 fx-op/ant cord syn
806.18	C5-c7 fx-op/cen cord syn
806.19	C5-c7 fx-op/cord inj NEC
806.20	T1-t6 fx-cl/cord inj NOS
806.21	T1-t6 fx-cl/com cord les
806.22	T1-t6 fx-cl/ant cord syn
806.23	T1-t6 fx-cl/cen cord syn
806.24	T1-t6 fx-cl/cord inj NEC
806.25	T7-t12 fx-cl/crd inj NOS
806.26	T7-t12 fx-cl/com crd les
806.27	T7-t12 fx-cl/ant crd syn
806.28	T7-t12 fx-cl/cen crd syn
806.29	T7-t12 fx-cl/crd inj NEC
806.30	T1-t6 fx-op/cord inj NOS
806.31	T1-t6 fx-op/com cord les
806.32	T1-t6 fx-op/ant cord syn

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
806.33	T1-t6 fx-op/cen cord syn
806.34	T1-t6 fx-op/cord inj NEC
806.35	T7-t12 fx-op/crd inj NOS
806.36	T7-t12 fx-op/com crd les
806.37	T7-t12 fx-op/ant crd syn
806.38	T7-t12 fx-op/cen crd syn
806.39	T7-t12 fx-op/crd inj NEC
806.4	Cl lumbar fx w cord inj
806.5	Opn lumbar fx w cord inj
806.60	Fx sacrum-cl/crd inj NOS
806.61	Fx sacr-cl/cauda equ les
806.62	Fx sacr-cl/cauda inj NEC
806.69	Fx sacrum-cl/crd inj NEC
806.70	Fx sacrum-op/crd inj NOS
806.71	Fx sacr-op/cauda equ les
806.72	Fx sacr-op/cauda inj NEC
806.79	Fx sacrum-op/crd inj NEC
806.8	Vert fx NOS-cl w crd inj
806.9	Vert fx NOS-op w crd inj
807.00	Fracture rib NOS-closed
807.01	Fracture one rib-closed
807.02	Fracture two ribs-closed
807.03	Fracture three ribs-clos
807.04	Fracture four ribs-close
807.05	Fracture five ribs-close
807.06	Fracture six ribs-closed
807.07	Fracture seven ribs-clos
807.08	Fx eight/more rib-closed
807.09	Fx mult ribs NOS-closed
807.10	Fracture rib NOS-open
807.11	Fracture one rib-open
807.12	Fracture two ribs-open
807.13	Fracture three ribs-open

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
807.14	Fracture four ribs-open
807.15	Fracture five ribs-open
807.16	Fracture six ribs-open
807.17	Fracture seven ribs-open
807.18	Fx eight/more ribs-open
807.19	Fx mult ribs NOS-open
807.2	Fracture of sternum-clos
807.3	Fracture of sternum-open
807.4	Flail chest
807.5	Fx larynx/trachea-closed
807.6	Fx larynx/trachea-open
808.0	Fracture acetabulum-clos
808.1	Fracture acetabulum-open
808.2	Fracture of pubis-closed
808.3	Fracture of pubis-open
808.41	Fracture of ilium-closed
808.42	Fracture ischium-closed
808.43	Pelv fx-clos/pelv disrupt
808.49	Pelvic fracture NEC-clos
808.51	Fracture of ilium-open
808.52	Fracture of ischium-open
808.53	Pelv fx-open/pelv disrupt
808.59	Pelvic fracture NEC-open
808.8	Pelvic fracture NOS-clos
808.9	Pelvic fracture NOS-open
809.0	Fracture trunk bone-clos
809.1	Fracture trunk bone-open
810.00	Fx clavicle NOS-closed
810.01	Fx clavicl, stern end-cl
810.02	Fx clavicle shaft-closed
810.03	Fx clavicl, acrom end-cl
810.10	Fx clavicle NOS-open
810.11	Fx clavic, stern end-opn

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
810.12	Fx clavicle shaft-open
810.13	Fx clavic, acrom end-opn
811.00	Fx scapula NOS-closed
811.01	Fx scapul, acrom proc-cl
811.02	Fx scapul, corac proc-cl
811.03	Fx scap, glen cav/nck-cl
811.09	Fx scapula NEC-closed
811.10	Fx scapula NOS-open
811.11	Fx scapul, acrom proc-op
811.12	Fx scapul, corac proc-op
811.13	Fx scap, glen cav/nck-op
811.19	Fx scapula NEC-open
812.00	Fx up end humerus NOS-cl
812.01	Fx surg nck humerus-clos
812.02	Fx anatom nck humerus-cl
812.03	Fx gr tuberos humerus-cl
812.09	Fx upper humerus NEC-cl
812.10	Fx upper humerus NOS-opn
812.11	Fx surg neck humerus-opn
812.12	Fx anat neck humerus-opn
812.13	Fx gr tuberos humer-open
812.19	Fx upper humerus NEC-opn
812.20	Fx humerus NOS-closed
812.21	Fx humerus shaft-closed
812.30	Fx humerus NOS-open
812.31	Fx humerus shaft-open
812.40	Fx lower humerus NOS-cl
812.41	Suprcondyl fx humerus-cl
812.42	Fx humer, lat condyl-cl
812.43	Fx humer, med condyl-cl
812.44	Fx humer, condyl NOS-cl
812.49	Fx lower humerus NEC-cl
812.50	Fx lower humer NOS-open

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
812.51	Supracondyl fx humer-opn
812.52	Fx humer, lat condyl-opn
812.53	Fx humer, med condyl-opn
812.54	Fx humer, condyl NOS-opn
812.59	Fx lower humer NEC-open
813.00	Fx upper forearm NOS-cl
813.01	Fx olecran proc ulna-cl
813.02	Fx coronoid proc ulna-cl
813.03	Monteggia's fx-closed
813.04	Fx upper ulna NEC/NOS-cl
813.05	Fx radius head-closed
813.06	Fx radius neck-closed
813.07	Fx up radius NEC/NOS-cl
813.08	Fx up radius w ulna-clos
813.10	Fx upper forearm NOS-opn
813.11	Fx olecran proc ulna-opn
813.12	Fx coronoid pro ulna-opn
813.13	Monteggia's fx-open
813.14	Fx up ulna NEC/NOS-open
813.15	Fx radius head-open
813.16	Fx radius neck-open
813.17	Fx up radius NEC/NOS-opn
813.18	Fx up radius w ulna-open
813.20	Fx shaft forearm NOS-cl
813.21	Fx radius shaft-closed
813.22	Fx ulna shaft-closed
813.23	Fx shaft rad w ulna-clos
813.30	Fx shaft forearm NOS-opn
813.31	Fx radius shaft-open
813.32	Fx ulna shaft-open
813.33	Fx shaft rad w ulna-open
813.40	Fx lower forearm NOS-cl
813.41	Colles' fracture-closed

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
813.42	Fx distal radius NEC-cl
813.43	Fx distal ulna-closed
813.44	Fx low radius w ulna-cl
813.45	Torus fx radius-cl/alone
813.50	Fx lower forearm NOS-opn
813.51	Colles' fracture-open
813.52	Fx distal radius NEC-opn
813.53	Fx distal ulna-open
813.54	Fx low radius w ulna-opn
813.80	Fx forearm NOS-closed
813.81	Fx radius NOS-closed
813.82	Fracture ulna NOS-closed
813.83	Fx radius w ulna NOS-cl
813.90	Fx forearm NOS-open
813.91	Fracture radius NOS-open
813.92	Fracture ulna NOS-open
813.93	Fx radius w ulna NOS-opn
814.00	Fx carpal bone NOS-close
814.01	Fx navicular, wrist-clos
814.02	Fx lunate, wrist-closed
814.03	Fx triquetral, wrist-cl
814.04	Fx pisiform-closed
814.05	Fx trapezium bone-closed
814.06	Fx trapezoid bone-closed
814.07	Fx capitate bone-closed
814.08	Fx hamate bone-closed
814.09	Fx carpal bone NEC-close
814.10	Fx carpal bone NOS-open
814.11	Fx navicular, wrist-open
814.12	Fx lunate, wrist-open
814.13	Fx triquetral, wrist-opn
814.14	Fx pisiform-open
814.15	Fx trapezium bone-open

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
814.16	Fx trapezoid bone-open
814.17	Fx capitate bone-open
814.18	Fx hamate bone-open
814.19	Fx carpal bone NEC-open
815.00	Fx metacarpal NOS-closed
815.01	Fx 1st metacarp base-cl
815.02	Fx metacarp base NEC-cl
815.03	Fx metacarpal shaft-clos
815.04	Fx metacarpal neck-close
815.09	Mult fx metacarpus-close
815.10	Fx metacarpal NOS-open
815.11	Fx 1st metacarp base-opn
815.12	Fx metacarp base NEC-opn
815.13	Fx metacarpal shaft-open
815.14	Fx metacarpal neck-open
815.19	Mult fx metacarpus-open
816.00	Fx phalanx, hand NOS-cl
816.01	Fx mid/prx phal, hand-cl
816.02	Fx dist phalanx, hand-cl
816.03	Fx mult phalan, hand-cl
816.10	Fx phalanx, hand NOS-opn
816.11	Fx mid/prx phal, hand-op
816.12	Fx distal phal, hand-opn
816.13	Fx mult phalan, hand-opn
817.0	Multiple fx hand-closed
817.1	Multiple fx hand-open
818.0	Fx arm mult/NOS-closed
818.1	Fx arm mult/NOS-open
819.0	Fx arms w rib/sternum-cl
819.1	Fx arms w rib/stern-open
820.00	Fx femur intrcaps NOS-cl
820.01	Fx up femur epiphy-clos
820.02	Fx femur, midcervic-clos

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
820.03	Fx base femoral nck-clos
820.09	Fx femur intrcaps NEC-cl
820.10	Fx femur intrcap NOS-opn
820.11	Fx up femur epiphy-open
820.12	Fx femur, midcervic-open
820.13	Fx base femoral nck-open
820.19	Fx femur intrcap NEC-opn
820.20	Trochanteric fx NOS-clos
820.21	Intertrochanteric fx-cl
820.22	Subtrochanteric fx-close
820.30	Trochanteric fx NOS-open
820.31	Intertrochanteric fx-opn
820.32	Subtrochanteric fx-open
820.8	Fx neck of femur NOS-cl
820.9	Fx neck of femur NOS-opn
821.00	Fx femur NOS-closed
821.01	Fx femur shaft-closed
821.10	Fx femur NOS-open
821.11	Fx femur shaft-open
821.20	Fx low end femur NOS-cl
821.21	Fx femoral condyle-close
821.22	Fx low femur epiphy-clos
821.23	Supracondyl fx femur-cl
821.29	Fx low end femur NEC-cl
821.30	Fx low end femur NOS-opn
821.31	Fx femoral condyle-open
821.32	Fx low femur epiphy-open
821.33	Supracondyl fx femur-opn
821.39	Fx low end femur NEC-opn
822.0	Fracture patella-closed
822.1	Fracture patella-open
823.00	Fx upper end tibia-close
823.01	Fx upper end fibula-clos

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
823.02	Fx up tibia w fibula-cl
823.10	Fx upper end tibia-open
823.11	Fx upper end fibula-open
823.12	Fx up tibia w fibula-opn
823.20	Fx shaft tibia-closed
823.21	Fx shaft fibula-closed
823.22	Fx shaft fib w tib-clos
823.30	Fx tibia shaft-open
823.31	Fx fibula shaft-open
823.32	Fx shaft tibia w fib-opn
823.40	Torus fracture of tibia
823.41	Torus fracture of fibula
823.42	Torus fx tibia/fibula
823.80	Fx tibia NOS-closed
823.81	Fx fibula NOS-closed
823.82	Fx tibia w fibula NOS-cl
823.90	Fx tibia NOS-open
823.91	Fx fibula NOS-open
823.92	Fx tibia w fib NOS-open
824.0	Fx medial malleolus-clos
824.1	Fx medial malleolus-open
824.2	Fx lateral malleolus-cl
824.3	Fx lateral malleolus-opn
824.4	Fx bimalleolar-closed
824.5	Fx bimalleolar-open
824.6	Fx trimalleolar-closed
824.7	Fx trimalleolar-open
824.8	Fx ankle NOS-closed
824.9	Fx ankle NOS-open
825.0	Fracture calcaneus-close
825.1	Fracture calcaneus-open
825.20	Fx foot bone NOS-closed
825.21	Fx astragalus-closed

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
825.22	Fx navicular, foot-clos
825.23	Fx cuboid-closed
825.24	Fx cuneiform, foot-clos
825.25	Fx metatarsal-closed
825.29	Fx foot bone NEC-closed
825.30	Fx foot bone NOS-open
825.31	Fx astragalus-open
825.32	Fx navicular, foot-open
825.33	Fx cuboid-open
825.34	Fx cuneiform, foot-open
825.35	Fx metatarsal-open
825.39	Fx foot bone NEC-open
826.0	Fx phalanx, foot-closed
826.1	Fx phalanx, foot-open
827.0	Fx lower limb NEC-closed
827.1	Fx lower limb NEC-open
828.0	Fx legs w arm/rib-closed
828.1	Fx legs w arm/rib-open
829.0	Fracture NOS-closed
829.1	Fracture NOS-open
830.0	Dislocation jaw-closed
830.1	Dislocation jaw-open
831.00	Disloc shoulder NOS-clos
831.01	Ant disloc humerus-close
831.02	Post disloc humerus-clos
831.03	Infer disloc humerus-cl
831.04	Disloc acromioclavic-cl
831.09	Disloc shoulder NEC-clos
831.10	Disloc shoulder NOS-open
831.11	Ant disloc humerus-open
831.12	Post disloc humerus-open
831.13	Infer disloc humerus-opn
831.14	Disloc acromioclavic-opn

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
831.19	Disloc shoulder NEC-open
832.00	Dislocat elbow NOS-close
832.01	Ant disloc elbow-closed
832.02	Post disloc elbow-closed
832.03	Med disloc elbow-closed
832.04	Lat disloc elbow-closed
832.09	Dislocat elbow NEC-close
832.10	Dislocat elbow NOS-open
832.11	Ant disloc elbow-open
832.12	Post disloc elbow-open
832.13	Med disloc elbow-open
832.14	Lat dislocat elbow-open
832.19	Dislocat elbow NEC-open
833.00	Disloc wrist NOS-closed
833.01	Disloc dist radiouln-cl
833.02	Disloc radiocarpal-clos
833.03	Disloca midcarpal-closed
833.04	Disloc carpometacarp-cl
833.05	Disloc metacarpal-closed
833.09	Disloc wrist NEC-closed
833.10	Dislocat wrist NOS-open
833.11	Disloc dist radiouln-opn
833.12	Disloc radiocarpal-open
833.13	Dislocat midcarpal-open
833.14	Disloc carpometacarp-opn
833.15	Dislocat metacarpal-open
833.19	Dislocat wrist NEC-open
834.00	Disl finger NOS-closed
834.01	Disloc metacarpophaln-cl
834.02	Disl interphaln hand-cl
834.10	Disloc finger NOS-open
834.11	Disl metacarpophalan-opn
834.12	Disl interphaln hand-opn

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
835.00	Dislocat hip NOS-closed
835.01	Posterior disloc hip-cl
835.02	Obturator disloc hip-cl
835.03	Ant disloc hip NEC-clos
835.10	Dislocation hip NOS-open
835.11	Posterior disloc hip-opn
835.12	Obturator disloc hip-opn
835.13	Ant disloc hip NEC-open
836.0	Tear med menisc knee-cur
836.1	Tear lat menisc knee-cur
836.2	Tear meniscus NEC-curren
836.3	Dislocat patella-closed
836.4	Dislocation patella-open
836.50	Dislocat knee NOS-closed
836.51	Ant disloc prox tibia-cl
836.52	Post disl prox tibia-cl
836.53	Med disloc prox tibia-cl
836.54	Lat disloc prox tibia-cl
836.59	Dislocat knee NEC-closed
836.60	Dislocat knee NOS-open
836.61	Ant disl prox tibia-open
836.62	Post disl prox tibia-opn
836.63	Med disl prox tibia-open
836.64	Lat disl prox tibia-open
836.69	Dislocat knee NEC-open
837.0	Dislocation ankle-closed
837.1	Dislocation ankle-open
838.00	Dislocat foot NOS-closed
838.01	Disloc tarsal NOS-closed
838.02	Disloc midtarsal-closed
838.03	Disloc tarsometatars-cl
838.04	Disloc metatarsal NOS-cl
838.05	Disl metatarsophalang-cl

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
838.06	Disl interphalan foot-cl
838.09	Dislocat foot NEC-closed
838.10	Dislocat foot NOS-open
838.11	Disloc tarsal NOS-open
838.12	Disloc midtarsal-open
838.13	Disl tarsometatarsal-opn
838.14	Disl metatarsal NOS-open
838.15	Disloc metatarsophal-opn
838.16	Dis interphalan foot-opn
838.19	Dislocat foot NEC-open
839.00	Disloc cerv vert NOS-cl
839.01	Disloc 1st cerv vert-cl
839.02	Disloc 2nd cerv vert-cl
839.03	Disloc 3rd cerv vert-cl
839.04	Disloc 4th cerv vert-cl
839.05	Disloc 5th cerv vert-cl
839.06	Disloc 6th cerv vert-cl
839.07	Disloc 7th cerv vert-cl
839.08	Disloc mult cerv vert-cl
839.10	Disloc cerv vert NOS-opn
839.11	Disloc 1st cerv vert-opn
839.12	Disloc 2nd cerv vert-opn
839.13	Disloc 3rd cerv vert-opn
839.14	Disloc 4th cerv vert-opn
839.15	Disloc 5th cerv vert-opn
839.16	Disloc 6th cerv vert-opn
839.17	Disloc 7th cerv vert-opn
839.18	Disloc mlt cerv vert-opn
839.20	Dislocat lumbar vert-cl
839.21	Disloc thoracic vert-cl
839.30	Dislocat lumbar vert-opn
839.31	Disloc thoracic vert-opn
839.40	Dislocat vertebra NOS-cl

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
839.41	Dislocat coccyx-closed
839.42	Dislocat sacrum-closed
839.49	Dislocat vertebra NEC-cl
839.50	Disloc vertebra NOS-open
839.51	Dislocat coccyx-open
839.52	Dislocat sacrum-open
839.59	Disloc vertebra NEC-open
839.61	Dislocat sternum-closed
839.69	Dislocat site NEC-closed
839.71	Dislocation sternum-open
839.79	Dislocat site NEC-open
839.8	Dislocation NEC-closed
839.9	Dislocation NEC-open
850.0	Concussion w/o coma
850.11	Concus-brief coma <31 mn
850.12	Concus-brf coma 31-59 mn
850.2	Concussion-moderate coma
850.3	Concussion-prolong coma
850.4	Concussion-deep coma
850.5	Concussion w coma NOS
850.9	Concussion NOS
851.00	Cerebral cortex contusion
851.01	Cortex contusion-no coma
851.02	Cortex contus-brief coma
851.03	Cortex contus-mod coma
851.04	Cortx contus-prolng coma
851.05	Cortex contus-deep coma
851.06	Cortex contus-coma NOS
851.09	Cortex contus-concus NOS
851.10	Cortex contusion/opn wnd
851.11	Opn cortx contus-no coma
851.12	Opn cort contus-brf coma
851.13	Opn cort contus-mod coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
851.14	Opn cort contu-prol coma
851.15	Opn cort contu-deep coma
851.16	Opn cort contus-coma NOS
851.19	Opn cortex contus-concuss
851.20	Cerebral cortex lacerat
851.21	Cortex lacerat w/o coma
851.22	Cortex lacera-brief coma
851.23	Cortex lacerat-mod coma
851.24	Cortex lacerat-prol coma
851.25	Cortex lacerat-deep coma
851.26	Cortex lacerat-coma NOS
851.29	Cortex lacerat-concuss
851.30	Cortex lacer w opn wound
851.31	Opn cortex lacer-no coma
851.32	Opn cortex lac-brief coma
851.33	Opn cortex lacer-mod coma
851.34	Opn cortex lac-proln coma
851.35	Opn cortex lac-deep coma
851.36	Opn cortex lacer-coma NOS
851.39	Opn cortex lacer-concuss
851.40	Cerebel/brain stm contus
851.41	Cerebell contus w/o coma
851.42	Cerebell contus-brf coma
851.43	Cerebell contus-mod coma
851.44	Cerebel contus-prol coma
851.45	Cerebel contus-deep coma
851.46	Cerebell contus-coma NOS
851.49	Cerebell contus-concuss
851.50	Cerebel contus w opn wnd
851.51	Opn cerebe cont w/o coma
851.52	Opn cerebe cont-brf coma
851.53	Opn cerebe cont-mod coma
851.54	Opn cerebe cont-prol com

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
851.55	Opn cerebe cont-deep com
851.56	Opn cerebe cont-coma NOS
851.59	Opn cerebel cont-concuss
851.60	Cerebel/brain stem lacer
851.61	Cerebel lacerat w/o coma
851.62	Cerebel lacer-brief coma
851.63	Cerebel lacerat-mod coma
851.64	Cerebel lacer-proln coma
851.65	Cerebell lacer-deep coma
851.66	Cerebel lacerat-coma NOS
851.69	Cerebel lacer-concussion
851.70	Cerebel lacer w open wnd
851.71	Opn cerebel lac w/o coma
851.72	Opn cerebel lac-brf coma
851.73	Opn cerebel lac-mod coma
851.74	Opn cerebe lac-prol coma
851.75	Opn cerebe lac-deep coma
851.76	Opn cerebel lac-coma NOS
851.79	Opn cerebell lac-concuss
851.80	Brain laceration NEC
851.81	Brain lacer NEC w/o coma
851.82	Brain lac NEC-brief coma
851.83	Brain lacer NEC-mod coma
851.84	Brain lac NEC-proln coma
851.85	Brain lac NEC-deep coma
851.86	Brain lacer NEC-coma NOS
851.89	Brain lacer NEC-concuss
851.90	Brain lac NEC w open wnd
851.91	Opn brain lacer w/o coma
851.92	Opn brain lac-brief coma
851.93	Opn brain lacer-mod coma
851.94	Opn brain lac-proln coma
851.95	Open brain lac-deep coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
851.96	Opn brain lacer-coma NOS
851.99	Open brain lacer-concuss
852.00	Traum subarachnoid hem
852.03	Subarach hem-mod coma
852.04	Subarach hem-prolng coma
852.10	Subarach hem w opn wound
852.12	Op subarach hem-brf coma
852.13	Op subarach hem-mod coma
852.14	Op subarach hem-prol com
852.15	Op subarach hem-deep com
852.16	Op subarach hem-coma NOS
852.19	Opn subarach hem-concuss
852.20	Traumatic subdural hem
852.21	Subdural hem w/o coma
852.22	Subdural hem-brief coma
852.23	Subdural hemorr-mod coma
852.24	Subdural hem-prolng coma
852.25	Subdural hem-deep coma
852.26	Subdural hemorr-coma NOS
852.29	Subdural hem-concussion
852.30	Subdural hem w opn wound
852.31	Open subdur hem w/o coma
852.32	Opn subdur hem-brf coma
852.33	Opn subdur hem-mod coma
852.34	Opn subdur hem-prol coma
852.35	Opn subdur hem-deep coma
852.36	Opn subdur hem-coma NOS
852.39	Opn subdur hem-concuss
852.40	Traumatic extradural hem
852.41	Extradural hem w/o coma
852.42	Extradur hem-brief coma
852.43	Extradural hem-mod coma
852.44	Extradur hem-proln coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
852.45	Extradural hem-deep coma
852.46	Extradural hem-coma NOS
852.49	Extadural hem-concuss
852.50	Extradural hem w opn wnd
852.51	Extradural hemor-no coma
852.52	Extradur hem-brief coma
852.53	Extradural hem-mod coma
852.54	Extradur hem-proln coma
852.55	Extradur hem-deep coma
852.56	Extradural hem-coma NOS
852.59	Extradural hem-concuss
853.00	Traumatic brain hem NEC
853.03	Brain hem NEC-mod coma
853.04	Brain hem NEC-proln coma
853.09	Brain hem NEC-concussion
853.10	Brain hem NEC w opn wnd
853.11	Brain hem opn w/o coma
853.12	Brain hem opn-brf coma
853.13	Brain hem open-mod coma
853.14	Brain hem opn-proln coma
853.15	Brain hem open-deep coma
853.16	Brain hem open-coma NOS
853.19	Brain hem opn-concussion
854.00	Brain injury NEC
854.01	Brain injury NEC-no coma
854.02	Brain inj NEC-brief coma
854.03	Brain inj NEC-mod coma
854.04	Brain inj NEC-proln coma
854.05	Brain inj NEC-deep coma
854.06	Brain inj NEC-coma NOS
854.09	Brain inj NEC-concussion
854.10	Brain injury w opn wnd
854.11	Opn brain inj w/o coma

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
854.12	Opn brain inj-brief coma
854.13	Opn brain inj-mod coma
854.14	Opn brain inj-proln coma
854.15	Opn brain inj-deep coma
854.16	Open brain inj-coma NOS
854.19	Opn brain inj-concussion
905.0	Late effec skull/face fx
905.1	Late eff spine/trunk fx
905.2	Late effect arm fx
905.3	Late eff femoral neck fx
905.4	Late effect leg fx
905.5	Late effect fracture NEC
905.6	Late effect dislocation
905.7	Late effec sprain/strain
905.8	Late effec tendon injury
905.9	Late eff traumat amputat
906.0	Lt eff opn wnd head/trnk
906.1	Late eff open wnd extrem
906.2	Late eff superficial inj
906.3	Late effect of contusion
906.4	Late effect of crushing
906.5	Late eff head/neck burn
906.6	Late eff wrist/hand burn
906.7	Late eff burn extrem NEC
906.8	Late effect of burns NEC
906.9	Late effect of burn NOS
907.0	Lt eff intracranial inj
907.1	Late eff cran nerve inj
907.2	Late eff spinal cord inj
907.3	Lt eff nerv inj trnk NEC
907.4	Lt eff nerv inj shld/arm
907.5	Lt eff nerv inj pelv/leg
907.9	Late eff nerve inj NEC

(continued)

Table B-1 (continued)
Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers

ICD9Code	ICD9LB
908.0	Late eff int injur chest
908.1	Late eff int inj abdomen
908.2	Late eff int injury NEC
908.3	Late eff inj periph vess
908.4	Lt eff inj thor/abd vess
908.5	Late eff FB in orifice
908.6	Late eff complic trauma
908.9	Late effect injury NOS
909.0	Late eff drug poisoning
909.1	Late eff nonmed substanc
909.2	Late effect of radiation
909.3	Late eff surg/med compl
909.4	Late eff cert ext cause
909.5	Lte efct advrs efct drug
909.9	Late eff exter cause NEC
925.1	Crush inj face scalp
925.2	Crush inj neck
926.0	Crush inj ext genitalia
926.11	Crushing injury back
926.12	Crushing injury buttock
926.19	Crushing inj trunk NEC
926.8	Mult crushing inj trunk
926.9	Crushing inj trunk NOS
927.00	Crush inj shoulder reg
927.01	Crush inj scapul region
927.02	Crush inj axillary reg
927.03	Crushing inj upper arm
927.09	Crush inj shoulder & arm
927.10	Crushing injury forearm
927.11	Crushing injury elbow
927.20	Crushing injury of hand
927.21	Crushing injury of wrist
927.3	Crushing injury finger

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
927.8	Mult crushing injury arm
927.9	Crushing injury arm NOS
928.00	Crushing injury thigh
928.01	Crushing injury hip
928.10	Crushing inj lower leg
928.11	Crushing injury knee
928.20	Crushing injury foot
928.21	Crushing injury ankle
928.3	Crushing injury toe
928.8	Mult crushing injury leg
928.9	Crushing injury leg NOS
929.0	Crush inj mult site NEC
929.9	Crushing injury NOS
940.0	Chemical burn periocular
940.1	Burn periocular area NEC
940.2	Alkal burn cornea/conjun
940.3	Acid burn cornea/conjunc
940.4	Burn cornea/conjunct NEC
940.5	Burn w eyeball destruct
940.9	Burn eye & adnexa NOS
941.00	Burn NOS head-unspec
941.01	Burn NOS ear
941.02	Burn NOS eye
941.03	Burn NOS lip
941.04	Burn NOS chin
941.05	Burn NOS nose
941.06	Burn NOS scalp
941.07	Burn NOS face NEC
941.08	Burn NOS neck
941.09	Burn NOS head-mult
941.10	1st deg burn head NOS
941.11	1st deg burn ear
941.12	1st deg burn eye

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
941.13	1st deg burn lip
941.14	1st deg burn chin
941.15	1st deg burn nose
941.16	1st deg burn scalp
941.17	1st deg burn face NEC
941.18	1st deg burn neck
941.19	1st deg burn head-mult
941.20	2nd deg burn head NOS
941.21	2nd deg burn ear
941.22	2nd deg burn eye
941.23	2nd deg burn lip
941.24	2nd deg burn chin
941.25	2nd deg burn nose
941.26	2nd deg burn scalp
941.27	2nd deg burn face NEC
941.28	2nd deg burn neck
941.29	2nd deg burn head-mult
941.30	3rd deg burn head NOS
941.31	3rd deg burn ear
941.32	3rd deg burn eye
941.33	3rd deg burn lip
941.34	3rd deg burn chin
941.35	3rd deg burn nose
941.36	3rd deg burn scalp
941.37	3rd deg burn face NEC
941.38	3rd deg burn neck
941.39	3rd deg burn head-mult
941.40	Deep 3 deg burn head NOS
941.41	Deep 3rd deg burn ear
941.42	Deep 3rd deg burn eye
941.43	Deep 3rd deg burn lip
941.44	Deep 3rd deg burn chin
941.45	Deep 3rd deg burn nose

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
941.46	Deep 3rd deg burn scalp
941.47	Deep 3rd burn face NEC
941.48	Deep 3rd deg burn neck
941.49	Deep 3 deg brn head-mult
941.50	3rd burn w loss-head NOS
941.51	3rd deg burn w loss-ear
941.52	3rd deg burn w loss-eye
941.53	3rd deg burn w loss-lip
941.54	3rd deg burn w loss-chin
941.55	3rd deg burn w loss-nose
941.56	3rd deg brn w loss-scalp
941.57	3rd burn w loss-face NEC
941.58	3rd deg burn w loss-neck
941.59	3rd brn w loss-head mult
942.00	Burn NOS trunk-unspec
942.01	Burn NOS breast
942.02	Burn NOS chest wall
942.03	Burn NOS abdominal wall
942.04	Burn NOS back
942.05	Burn NOS genitalia
942.09	Burn NOS trunk NEC
942.10	1st deg burn trunk NOS
942.11	1st deg burn breast
942.12	1st deg burn chest wall
942.13	1st deg burn abdomn wall
942.14	1st deg burn back
942.15	1st deg burn genitalia
942.19	1st deg burn trunk NEC
942.20	2nd deg burn trunk NOS
942.21	2nd deg burn breast
942.22	2nd deg burn chest wall
942.23	2nd deg burn abdomn wall
942.24	2nd deg burn back

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
942.25	2nd deg burn genitalia
942.29	2nd deg burn trunk NEC
942.30	3rd deg burn trunk NOS
942.31	3rd deg burn breast
942.32	3rd deg burn chest wall
942.33	3rd deg burn abdomn wall
942.34	3rd deg burn back
942.35	3rd deg burn genitalia
942.39	3rd deg burn trunk NEC
942.40	Deep 3rd burn trunk NOS
942.41	Deep 3rd deg burn breast
942.42	Deep 3rd burn chest wall
942.43	Deep 3rd burn abdom wall
942.44	Deep 3rd deg burn back
942.45	Deep 3rd burn genitalia
942.49	Deep 3rd burn trunk NEC
942.50	3rd brn w loss-trunk NOS
942.51	3rd burn w loss-breast
942.52	3rd brn w loss-chest wll
942.53	3rd brn w loss-abdom wll
942.54	3rd deg burn w loss-back
942.55	3rd brn w loss-genitalia
942.59	3rd brn w loss-trunk NEC
943.00	Burn NOS arm-unspec
943.01	Burn NOS forearm
943.02	Burn NOS elbow
943.03	Burn NOS upper arm
943.04	Burn NOS axilla
943.05	Burn NOS shoulder
943.06	Burn NOS scapula
943.09	Burn NOS arm-multiple
943.10	1st deg burn arm NOS
943.11	1st deg burn forearm

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
943.12	1st deg burn elbow
943.13	1st deg burn upper arm
943.14	1st deg burn axilla
943.15	1st deg burn shoulder
943.16	1st deg burn scapula
943.19	1st deg burn arm-mult
943.20	2nd deg burn arm NOS
943.21	2nd deg burn forearm
943.22	2nd deg burn elbow
943.23	2nd deg burn upper arm
943.24	2nd deg burn axilla
943.25	2nd deg burn shoulder
943.26	2nd deg burn scapula
943.29	2nd deg burn arm-mult
943.30	3rd deg burn arm NOS
943.31	3rd deg burn forearm
943.32	3rd deg burn elbow
943.33	3rd deg burn upper arm
943.34	3rd deg burn axilla
943.35	3rd deg burn shoulder
943.36	3rd deg burn scapula
943.39	3rd deg burn arm-mult
943.40	Deep 3 deg burn arm NOS
943.41	Deep 3 deg burn forearm
943.42	Deep 3 deg burn elbow
943.43	Deep 3 deg brn upper arm
943.44	Deep 3 deg burn axilla
943.45	Deep 3 deg burn shoulder
943.46	Deep 3 deg burn scapula
943.49	Deep 3 deg burn arm-mult
943.50	3rd burn w loss-arm NOS
943.51	3rd burn w loss-forearm
943.52	3rd burn w loss-elbow

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
943.53	3rd brn w loss-upper arm
943.54	3rd burn w loss-axilla
943.55	3rd burn w loss-shoulder
943.56	3rd burn w loss-scapula
943.59	3rd burn w loss arm-mult
944.00	Burn NOS hand-unspec
944.01	Burn NOS finger
944.02	Burn NOS thumb
944.03	Burn NOS mult fingers
944.04	Burn NOS finger w thumb
944.05	Burn NOS palm
944.06	Burn NOS back of hand
944.07	Burn NOS wrist
944.08	Burn NOS hand-multiple
944.10	1st deg burn hand NOS
944.11	1st deg burn finger
944.12	1st deg burn thumb
944.13	1st deg burn mult finger
944.14	1 deg burn fingr w thumb
944.15	1st deg burn palm
944.16	1 deg burn back of hand
944.17	1st deg burn wrist
944.18	1st deg burn hand-mult
944.20	2nd deg burn hand NOS
944.21	2nd deg burn finger
944.22	2nd deg burn thumb
944.23	2nd deg burn mult finger
944.24	2 deg burn fingr w thumb
944.25	2nd deg burn palm
944.26	2 deg burn back of hand
944.27	2nd deg burn wrist
944.28	2nd deg burn hand-mult
944.30	3rd deg burn hand NOS

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
944.31	3rd deg burn finger
944.32	3rd deg burn thumb
944.33	3rd deg burn mult finger
944.34	3 deg burn fingr w thumb
944.35	3rd deg burn palm
944.36	3 deg burn back of hand
944.37	3rd deg burn wrist
944.38	3rd deg burn hand-mult
944.40	Deep 3 deg brn hand NOS
944.41	Deep 3 deg burn finger
944.42	Deep 3 deg burn thumb
944.43	Deep 3rd brn mult finger
944.44	Deep 3rd brn fngr w thmb
944.45	Deep 3 deg burn palm
944.46	Deep 3rd brn back of hnd
944.47	Deep 3 deg burn wrist
944.48	Deep 3 deg brn hand-mult
944.50	3rd brn w loss-hand NOS
944.51	3rd burn w loss-finger
944.52	3rd burn w loss-thumb
944.53	3rd brn w loss-mult fngr
944.54	3rd brn w loss-fngr/thmb
944.55	3rd burn w loss-palm
944.56	3rd brn w loss-bk of hnd
944.57	3rd burn w loss-wrist
944.58	3rd brn w loss hand-mult
945.00	Burn NOS leg-unspec
945.01	Burn NOS toe
945.02	Burn NOS foot
945.03	Burn NOS ankle
945.04	Burn NOS lower leg
945.05	Burn NOS knee
945.06	Burn NOS thigh

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
945.09	Burn NOS leg-multiple
945.10	1st deg burn leg NOS
945.11	1st deg burn toe
945.12	1st deg burn foot
945.13	1st deg burn ankle
945.14	1st deg burn lower leg
945.15	1st deg burn knee
945.16	1st deg burn thigh
945.19	1st deg burn leg-mult
945.20	2nd deg burn leg NOS
945.21	2nd deg burn toe
945.22	2nd deg burn foot
945.23	2nd deg burn ankle
945.24	2nd deg burn lower leg
945.25	2nd deg burn knee
945.26	2nd deg burn thigh
945.29	2nd deg burn leg-mult
945.30	3rd deg burn leg NOS
945.31	3rd deg burn toe
945.32	3rd deg burn foot
945.33	3rd deg burn ankle
945.34	3rd deg burn low leg
945.35	3rd deg burn knee
945.36	3rd deg burn thigh
945.39	3rd deg burn leg-mult
945.40	Deep 3rd deg brn leg NOS
945.41	Deep 3rd deg burn toe
945.42	Deep 3rd deg burn foot
945.43	Deep 3rd deg burn ankle
945.44	Deep 3rd deg brn low leg
945.45	Deep 3rd deg burn knee
945.46	Deep 3rd deg burn thigh
945.49	Deep 3 deg burn leg-mult

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
945.50	3 deg brn w loss-leg NOS
945.51	3 deg burn w loss-toe
945.52	3 deg burn w loss-foot
945.53	3 deg burn w loss-ankle
945.54	3 deg brn w loss-low leg
945.55	3 deg burn w loss-knee
945.56	3 deg burn w loss-thigh
945.59	3 deg brn w loss leg-mlt
946.0	Burn NOS multiple site
946.1	1st deg burn mult site
946.2	2nd deg burn mult site
946.3	3rd deg burn mult site
946.4	Deep 3 deg brn mult site
946.5	3rd brn w loss-mult site
947.0	Burn of mouth & pharynx
947.1	Burn larynx/trachea/lung
947.2	Burn of esophagus
947.3	Burn of GI tract
947.4	Burn of vagina & uterus
947.8	Burn internal organ NEC
947.9	Burn internal organ NOS
948.00	Bdy brn < 10%/3d deg NOS
948.10	10-19% bdy brn/3 deg NOS
948.11	10-19% bdy brn/10-19% 3d
948.20	20-29% bdy brn/3 deg NOS
948.21	20-29% bdy brn/10-19% 3d
948.22	20-29% bdy brn/20-29% 3d
948.30	30-39% bdy brn/3 deg NOS
948.31	30-39% bdy brn/10-19% 3d
948.32	30-39% bdy brn/20-29% 3d
948.33	30-39% bdy brn/30-39% 3d
948.40	40-49% bdy brn/3 deg NOS
948.41	40-49% bdy brn/10-19% 3d

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
948.42	40-49% bdy brn/20-29% 3d
948.43	40-49% bdy brn/30-39% 3d
948.44	40-49% bdy brn/40-49% 3d
948.50	50-59% bdy brn/3 deg NOS
948.51	50-59% bdy brn/10-19% 3d
948.52	50-59% bdy brn/20-29% 3d
948.53	50-59% bdy brn/30-39% 3d
948.54	50-59% bdy brn/40-49% 3d
948.55	50-59% bdy brn/50-59% 3d
948.60	60-69% bdy brn/3 deg NOS
948.61	60-69% bdy brn/10-19% 3d
948.62	60-69% bdy brn/20-29% 3d
948.63	60-69% bdy brn/30-39% 3d
948.64	60-69% bdy brn/40-49% 3d
948.65	60-69% bdy brn/50-59% 3d
948.66	60-69% bdy brn/60-69% 3d
948.70	70-79% bdy brn/3 deg NOS
948.71	70-79% bdy brn/10-19% 3d
948.72	70-79% bdy brn/20-29% 3d
948.73	70-79% bdy brn/30-39% 3d
948.74	70-79% bdy brn/40-49% 3d
948.75	70-79% bdy brn/50-59% 3d
948.76	70-79% bdy brn/60-69% 3d
948.77	70-79% bdy brn/70-79% 3d
948.80	80-89% bdy brn/3 deg NOS
948.81	80-89% bdy brn/10-19% 3d
948.82	80-89% bdy brn/20-29% 3d
948.83	80-89% bdy brn/30-39% 3d
948.84	80-89% bdy brn/40-49% 3d
948.85	80-89% bdy brn/50-59% 3d
948.86	80-89% bdy brn/60-69% 3d
948.87	80-89% bdy brn/70-79% 3d
948.88	80-89% bdy brn/80-89% 3d

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
948.90	90% + bdy brn/3d deg NOS
948.91	90% + bdy brn/10-19% 3rd
948.92	90% + bdy brn/20-29% 3rd
948.93	90% + bdy brn/30-39% 3rd
948.94	90% + bdy brn/40-49% 3rd
948.95	90% + bdy brn/50-59% 3rd
948.96	90% + bdy brn/60-69% 3rd
948.97	90% + bdy brn/70-79% 3rd
948.98	90% + bdy brn/80-89% 3rd
948.99	90% + bdy brn/90% + 3rd
949.0	Burn NOS
949.1	1st degree burn NOS
949.2	2nd degree burn NOS
949.3	3rd degree burn NOS
949.4	Deep 3rd deg burn NOS
949.5	3rd burn w loss-site NOS
959.01	Head injury NOS
959.09	Face & neck injury
959.11	Injury of chest wall NEC
959.12	Injury of abdomen NEC
959.13	Fx corpus cavnosm penis
959.14	Inj external genital NEC
959.19	Trunk injury-sites NEC
959.2	Shldr/upper arm inj NOS
959.3	Elb/forearm/wrst inj NOS
959.4	Hand injury NOS
959.5	Finger injury NOS
959.6	Hip & thigh injury NOS
959.7	Lower leg injury NOS
959.8	Injury mlt site/site NEC
959.9	Injury-site NOS
991.6	Hypothermia
991.8	Effect reduced temp NEC

(continued)

Table B-1 (continued)
Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities, skilled nursing facilities, and aged or disabled HCBS waivers

ICD9Code	ICD9LB
991.9	Effect reduced temp NOS
992.0	Heat stroke & sunstroke
992.1	Heat syncope
992.2	Heat cramps
992.3	Heat exhaust-anhydrotic
992.4	Heat exhaust-salt deple
992.5	Heat exhaustion NOS
992.6	Heat fatigue, transient
992.7	Heat edema
992.8	Heat effect NEC
992.9	Heat effect NOS
994.1	Drowning/nonfatal submer
994.2	Effects of hunger
994.3	Effects of thirst
994.7	Asphyxiation/strangulat
994.8	Effects electric current
Psychosis, severe agitation, organic brain syndrome 290.42	Vasc dementia w delusion
290.43	Vasc dementia w depressn
290.8	Senile psychosis NEC
290.9	Senile psychot cond NOS
293.81	Psy dis w delus oth dis
293.82	Psy dis w halluc oth dis
293.83	Mood disorder other dis
293.84	Anxiety disorder oth dis
293.89	Transient mental dis NEC
293.9	Transient mental dis NOS
297.0	Paranoid state, simple
297.1	Delusional disorder
297.2	Paraphrenia
297.3	Shared psychotic disord
297.8	Paranoid states NEC
297.9	Paranoid state NOS

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
298.0	React depress psychosis
298.1	Excitativ type psychosis
298.2	Reactive confusion
298.3	Acute paranoid reaction
298.4	Psychogen paranoid psych
298.8	React psychosis NEC/NOS
298.9	Psychosis NOS
Seizures	
345.00	Gen noncv ep w/o intr ep
345.01	Gen nonconv ep w intr ep
345.10	Gen cnv epil w/o intr ep
345.11	Gen cnv epil w intr epil
345.2	Petit mal status
345.3	Grand mal status
345.40	Psymotr epil w/o int epi
345.41	Psymotr epil w intr epil
345.50	Part epil w/o intr epil
345.51	Part epil w intr epil
345.60	Inf spasm w/o intr epil
345.61	Inf spasm w intract epil
345.70	Epil par cont w/o int ep
345.71	Epil par cont w intr epi
345.80	Epilep NEC w/o intr epil
345.81	Epilepsy NEC w intr epil
345.90	Epilep NOS w/o intr epil
345.91	Epilepsy NOS w intr epil
436.	Cva
780.31	Febrile convulsions NOS
780.39	Convulsions NEC
Asthma	
493.00	Extrinsic asthma NOS
493.01	Ext asthma w status asth
493.02	Ext asthma w(acute) exac

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
493.10	Intrinsic asthma NOS
493.11	Int asthma w status asth
493.12	Int asthma w (ac) exac
493.20	Chronic obst asthma NOS
493.21	Ch ob asthma w stat asth
493.22	Ch obst asth w (ac) exac
493.81	Exerese ind bronchospasm
493.82	Cough variant asthma
493.90	Asthma NOS
493.91	Asthma w status asthmat
493.92	Asthma NOS w (ac) exac
COPD, chronic bronchitis	
466.0	Acute bronchitis
466.11	Acu broncholitis d/t RSV
466.19	Acu brnchlts d/t oth org
490.	Bronchitis NOS
491.0	Simple chr bronchitis
491.1	Mucopurul chr bronchitis
491.20	Obst chr bronc w/o exac
491.21	Obs chr bronc w(ac) exac
491.8	Chronic bronchitis NEC
491.9	Chronic bronchitis NOS
492.0	Emphysematous bleb
492.8	Emphysema NEC
494.0	Bronchiectas w/o ac exac
494.1	Bronchiectasis w ac exac
496.	Chr airway obstruct NEC
Failure to thrive—weight loss	
783.21	Abnormal loss of weight
783.22	Underweight
783.3	Feeding problem
783.7	Failure to thrive-adult

(continued)

Table B-1 (continued)
**Potentially avoidable hospitalizations conditions and ICD-9 codes from nursing facilities,
 skilled nursing facilities, and aged or disabled HCBS waivers**

ICD9Code	ICD9LB
Nutritional deficiencies	
260.	Kwashiorkor
261.	Nutritional marasmus
262.	Oth severe malnutrition
263.0	Malnutrition mod degree
263.1	Malnutrition mild degree
263.2	Arrest devel d/t malnutr
263.8	Protein-cal malnutr NEC
263.9	Protein-cal malnutr NOS
268.0	Rickets, active
268.1	Rickets, late effect

HCBS = home and community-based services.

**APPENDIX C:
POTENTIALLY AVOIDABLE HOSPITALIZATIONS FROM MEDICAID AGED OR
DISABLED HCBS WAIVERS—FULL CONDITION LIST**

Table C-1
Potentially avoidable hospitalizations from Medicaid aged or disabled HCBS waivers,
using full condition list

Location	Number of duals with Medicaid waiver stays	Potentially avoidable hospitalizations	Hospitalization rate (per 1,000 person-years)	Average length of stay (days)
U.S.	373,637	112,218	408	6.1
Alabama	5,509	1,495	364	6.1
Alaska	1,624	399	329	5.9
Arkansas	8,196	2,808	457	6.4
California	9,493	2,548	359	6.5
Colorado	10,223	2,496	323	5.2
Connecticut	10,134	2,749	351	5.9
Delaware	1,184	335	364	6.4
District of Columbia	722	229	509	8.6
Florida	11,961	3,367	402	6.8
Georgia	12,028	3,684	411	6.1
Hawaii	1,435	402	361	9.9
Idaho	6,194	1,234	263	4.7
Illinois	38,112	10,965	377	5.7
Indiana	2,738	947	476	6.1
Iowa	10,148	2,706	357	5.0
Kansas	11,601	3,192	359	5.8
Kentucky	8,757	3,868	594	5.7
Louisiana	3,088	1,204	480	8.2
Maryland	3,236	1,047	429	5.7
Massachusetts	5,549	1,594	419	6.9
Michigan	8,099	2,413	395	6.2
Minnesota	12,878	2,101	250	4.7
Mississippi	9,862	3,145	417	6.4
Missouri	20,343	6,203	393	5.7
Montana	2,681	526	234	4.6
Nebraska	3,515	885	358	5.2
Nevada	1,791	547	406	8.0
New Hampshire	2,249	711	413	6.0

(continued)

Table C-1 (continued)
Potentially avoidable hospitalizations from Medicaid aged or disabled HCBS waivers,
using full condition list

Location	Number of duals with Medicaid waiver stays	Potentially avoidable hospitalizations	Hospitalization rate (per 1,000 person-years)	Average length of stay (days)
New Jersey	1,178	290	4,420	7.7
New Mexico	2,172	578	354	6.1
New York	—	—	—	—
North Carolina	11,716	3,783	443	6.2
North Dakota	361	101	405	5.4
Ohio	30,916	11,178	490	5.7
Oklahoma	14,073	4,260	460	6.4
Oregon	10,759	2,094	276	4.9
Pennsylvania	16,503	5,557	498	6.7
Rhode Island	1,973	604	424	6.2
South Carolina	11,192	3,824	437	7.4
South Dakota	980	221	321	5.3
Tennessee	451	138	400	9.7
Texas	32,445	10,932	438	7.0
Utah	739	151	283	4.4
Vermont	1,158	177	273	4.9
Virginia	9,985	3,398	480	6.4
Washington	—	—	—	—
West Virginia	2,363	760	552	6.1
Wisconsin	—	—	—	—
Wyoming	1,294	365	371	4.5
U.S. results for smaller set of conditions for community-based care	326,508	68,625	250	5.5

HCBS = home and community-based services.

NOTE: Data on waiver status not available for New York, Washington, and Wisconsin and is so noted with —. Results for New Jersey are not comparable to other states and are being investigated.

Table C-2
Potentially avoidable hospitalizations by condition—dually eligible beneficiaries in Medicaid aged or disabled HCBS waivers, using full condition list

Condition	Number of enrollees in relevant population	Potentially avoidable hospitalizations	Percentage distribution	Hospitalization rate (per 1,000 person-years)	Average length of stay
All	373,637	112,218	100.0	408	6.1
Altered mental status, acute confusion, delirium*	—	599	0.5	2	6.4
Anemia*	—	2,108	1.9	8	4.2
COPD, asthma	—	16,170	14.4	59	5.2
Congestive heart failure	—	22,634	20.2	83	5.8
Constipation, impaction	—	1,371	1.2	5	4.3
Dehydration	—	12,604	11.2	46	5.7
Diarrhea, gastroenteritis, <i>C.Difficile</i> *	—	3,393	3.0	12	5.0
Falls/trauma*	—	8,478	7.6	31	7.7
Hypertension	—	715	0.6	3	3.6
Pneumonia*	—	20,841	18.6	76	6.8
Poor glycemic control	—	1,360	1.2	5	4.9
Psychosis, agitation, organic brain syndrome*	—	715	0.6	3	10.8
Seizures	—	2,504	2.2	9	5.0
Skin ulcers, cellulitis*	—	7,459	6.6	27	9.0
Urinary tract infection	—	10,767	9.6	39	5.3
Weight loss and malnutrition	—	500	0.4	2	6.9
All condition categories minus conditions with asterisk	326,508	68,625	61.2	250	5.5

— = Not available.

COPD = chronic obstructive pulmonary disease; HCBS = home and community-based services.

* May be excluded for waiver stays, because condition is less often preventable or safely diagnosed and treated in community setting.

**APPENDIX D:
STATE-LEVEL DATA REGARDING CONDITIONS ASSOCIATED WITH
POTENTIALLY AVOIDABLE HOSPITALIZATIONS**

Table D-1
Potentially avoidable hospitalizations by state—dually eligible beneficiaries from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005

Location	Number of potentially avoidable hospitalizations	%	%	%	%	%	%	%	%
		pneumonia	congestive heart failure	urinary tract infection	dehydration	falls/ trauma	COPD asthma	skin ulcers cellulitis	all other conditions
U.S.	382,846	26.5	16.4	14.0	12.3	6.9	9.0	4.2	10.7
Alabama	6,907	25.9	16.8	14.6	11.9	7.0	8.8	3.1	12.0
Alaska	269	6.7	27.5	18.2	17.8	4.8	19.0	1.1	4.8
Arkansas	7,495	26.2	17.6	14.5	11.3	5.3	10.4	3.9	10.8
California	20,980	36.3	11.9	13.6	10.7	5.6	6.5	5.7	9.7
Colorado	2,920	19.0	14.8	15.0	13.8	9.6	15.1	2.3	10.4
Connecticut	6,597	28.8	18.7	12.5	13.8	6.6	9.2	2.5	7.9
Delaware	1,160	29.6	15.2	16.5	12.6	6.5	7.5	3.4	8.9
District of Columbia	1,118	22.7	15.0	18.2	15.6	4.3	5.7	6.0	12.5
Florida	20,217	24.5	16.5	13.8	12.1	7.9	7.8	4.4	12.8
Georgia	12,312	27.0	16.7	14.5	13.4	6.5	8.4	3.4	10.1
Hawaii	473	30.4	16.7	15.2	13.1	6.3	7.8	2.1	8.2
Idaho	1,229	20.4	20.6	11.8	14.0	6.7	14.4	2.0	10.1
Illinois	26,292	22.6	18.3	12.2	12.3	6.0	11.1	4.7	12.8
Indiana	9,339	30.9	14.7	13.2	10.7	9.3	6.8	4.4	10.0
Iowa	5,254	26.3	18.5	10.6	11.5	8.7	13.2	3.7	7.4
Kansas	5,892	24.5	18.7	11.2	12.9	8.2	11.5	3.1	9.9
Kentucky	10,057	28.0	18.4	12.6	11.5	5.7	12.9	2.5	8.4
Louisiana	12,231	24.9	13.2	18.6	11.0	5.2	6.9	8.4	11.8
Maryland	5,235	27.2	15.2	15.4	13.3	6.5	6.8	4.1	11.5
Massachusetts	9,232	29.2	14.4	13.1	11.9	7.9	7.7	3.0	12.9
Michigan	10,916	26.0	17.0	13.6	12.5	8.3	7.7	4.3	10.6
Minnesota	2,598	16.8	20.4	10.7	15.9	7.2	14.8	2.6	11.7
Mississippi	9,133	22.0	18.4	15.7	12.4	4.1	11.0	4.5	12.0

(continued)

Table D-1 (continued)
Potentially avoidable hospitalizations by state—dually eligible beneficiaries from nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005

Location	Number of potentially avoidable hospitalizations	% pneumonia	% congestive heart failure	% urinary tract infection	% dehydration	% falls/trauma	% COPD asthma	% skin ulcers cellulitis	% all other conditions
Missouri	13,496	21.7	19.9	12.0	13.2	7.4	11.4	3.6	10.7
Montana	1,003	26.4	13.9	11.9	9.9	13.5	9.3	4.0	11.3
Nebraska	2,636	31.7	16.1	10.8	10.0	9.0	9.7	4.7	8.1
Nevada	1,003	23.1	15.3	14.0	13.4	7.1	11.9	3.4	12.0
New Hampshire	1,265	23.5	17.5	12.9	10.6	11.5	12.9	2.1	9.0
New Jersey	12,443	28.7	13.5	15.2	11.8	6.1	7.0	5.8	11.8
New Mexico	1,328	30.3	14.1	15.3	9.6	10.1	8.1	4.7	7.8
New York	25,652	32.0	12.5	12.9	11.1	7.6	6.2	4.9	12.8
North Carolina	9,426	24.5	18.3	14.8	14.2	6.3	9.0	3.1	9.8
North Dakota	942	39.8	14.1	9.6	8.6	12.5	4.9	3.3	7.2
Ohio	23,299	22.6	19.6	12.9	14.1	5.7	12.8	3.0	9.4
Oklahoma	8,034	22.7	17.2	13.0	13.2	6.6	12.2	3.8	11.1
Oregon	1,607	13.1	23.0	15.8	16.2	4.5	14.1	1.7	11.6
Pennsylvania	17,497	23.9	18.5	15.5	12.3	7.0	8.7	3.4	10.7
Rhode Island	1,517	23.5	20.6	14.8	12.5	5.5	10.3	2.8	10.0
South Carolina	6,940	20.4	18.4	17.1	16.7	4.5	10.2	2.6	10.2
South Dakota	1,153	38.2	13.4	10.1	6.6	11.9	6.7	4.7	8.6
Tennessee	11,008	34.8	13.0	15.1	10.3	7.5	5.7	3.9	9.8
Texas	33,920	24.5	16.5	16.7	11.9	6.7	8.4	5.4	9.8
Utah	594	28.8	13.5	15.0	8.2	16.8	5.1	4.7	7.9
Vermont	406	29.6	15.5	8.9	9.9	13.8	13.1	1.5	7.9
Virginia	8,285	23.2	18.1	14.6	16.0	6.6	8.9	2.8	9.8
Washington	2,570	35.6	11.4	11.3	9.5	10.9	5.7	5.2	10.4
West Virginia	3,435	28.8	15.7	13.7	11.3	8.0	10.5	3.6	8.5
Wisconsin	4,895	35.5	13.6	9.2	9.8	13.5	4.9	4.6	8.9
Wyoming	636	26.6	16.7	8.8	14.3	10.2	11.8	3.3	8.3

COPD = chronic obstructive pulmonary disease; HCBS = home and community-based services.

Table D-2
Most common conditions associated with potentially avoidable hospitalizations by state—dually eligible beneficiaries in nursing facilities, 2005

Location	Number of potentially avoidable hospitalizations	% pneumonia	% congestive heart failure	% urinary tract infection	% dehydration	% falls/trauma	% COPD asthma	% skin ulcers cellulitis	% all other conditions
U.S.	240,753	32.8	11.6	14.2	10.3	9.4	6.0	4.9	10.8
Alabama	4,607	29.9	13.2	14.7	11.0	8.9	7.1	3.3	11.9
Alaska	54	29.6	20.4	13.0	7.4	22.2	3.7	3.7	0.0
Arkansas	4,824	34.5	11.8	14.6	9.0	7.0	6.9	4.7	11.7
California	13,781	40.1	8.6	14.4	9.2	7.0	5.6	5.5	9.6
Colorado	1,279	34.8	7.3	11.6	8.9	18.9	5.2	3.8	9.3
Connecticut	2,834	39.3	11.4	12.0	10.8	11.3	4.3	2.8	8.3
Delaware	761	37.5	9.6	16.7	11.7	8.8	4.2	3.8	7.8
District of Columbia	767	25.8	9.1	20.3	14.3	5.9	4.6	7.4	12.5
Florida	13,377	28.2	12.6	14.2	10.9	10.0	6.3	4.9	12.8
Georgia	8,036	33.6	11.7	14.0	11.5	8.7	6.3	3.9	10.3
Hawaii	236	49.2	11.4	9.7	6.8	11.9	1.7	3.0	6.4
Idaho	443	43.6	9.3	6.3	7.7	15.8	4.5	4.1	8.8
Illinois	15,122	31.5	10.8	13.3	10.5	9.2	6.0	6.2	12.6
Indiana	7,129	33.3	12.6	13.4	10.0	10.8	5.5	4.6	9.8
Iowa	3,273	37.9	12.0	10.3	7.6	12.8	6.7	4.8	7.9
Kansas	3,407	36.5	11.7	11.4	8.6	12.9	5.0	4.3	9.5
Kentucky	5,962	37.3	13.2	12.8	9.5	8.2	6.9	3.2	8.9
Louisiana	8,889	26.9	10.8	19.1	10.3	6.0	6.4	8.3	12.1
Maryland	3,565	31.6	12.5	15.0	11.4	8.3	5.3	4.5	11.3
Massachusetts	5,929	33.5	11.0	13.9	9.9	10.3	5.3	3.3	12.8
Michigan	7,313	30.2	12.9	13.7	11.2	10.9	5.5	4.9	10.7
Minnesota	967	33.3	12.3	7.7	10.7	15.3	6.0	4.7	10.1
Mississippi	5,356	28.8	12.0	16.6	10.1	5.8	7.8	5.7	13.1

(continued)

Table D-2 (continued)
Most common conditions associated with potentially avoidable hospitalizations by state—dually eligible beneficiaries in nursing facilities, 2005

Location	Number of potentially avoidable hospitalizations	% pneumonia	% congestive heart failure	% urinary tract infection	% dehydration	% falls/trauma	% COPD asthma	% skin ulcers cellulitis	% all other conditions
Missouri	7,712	31.0	11.6	13.4	10.4	11.4	5.8	4.8	11.6
Montana	630	37.9	9.4	7.9	7.6	20.2	5.2	5.1	6.7
Nebraska	1,768	39.4	10.1	10.0	8.2	11.5	7.6	5.1	8.2
Nevada	523	34.8	7.3	13.2	10.5	12.6	5.2	4.2	12.2
New Hampshire	714	34.3	12.2	9.9	8.7	18.9	6.4	2.4	7.1
New Jersey	9,495	29.9	12.1	15.7	10.7	7.0	7.3	5.8	11.5
New Mexico	823	39.6	10.0	12.0	7.9	14.5	4.9	5.5	5.7
New York	17,615	32.0	11.0	13.5	10.6	8.6	6.4	4.9	13.1
North Carolina	5,035	33.5	12.0	14.9	10.6	10.0	5.2	3.8	10.1
North Dakota	746	42.9	13.5	8.6	7.9	14.2	3.4	2.9	6.6
Ohio	12,862	33.4	12.2	12.9	12.0	9.2	5.8	4.4	10.1
Oklahoma	4,598	33.7	10.2	13.8	10.7	10.0	5.4	5.3	10.7
Oregon	405	40.5	10.9	9.6	7.9	15.3	1.7	4.2	9.9
Pennsylvania	11,074	30.5	13.0	15.2	10.3	9.9	5.9	3.9	11.2
Rhode Island	844	31.3	15.3	14.5	10.4	8.9	5.2	3.6	10.9
South Carolina	3,340	32.9	11.5	16.0	12.8	7.6	5.7	3.4	10.1
South Dakota	933	41.6	10.9	9.8	6.2	13.5	4.8	4.9	8.3
Tennessee	8,382	35.9	11.6	15.6	9.8	8.1	5.7	3.7	9.6
Texas	21,631	30.8	11.6	16.6	10.2	9.1	5.8	6.3	9.7
Utah	393	32.1	8.9	14.2	7.4	22.9	2.5	4.6	7.4
Vermont	261	39.5	10.0	7.7	7.7	18.4	6.5	1.9	8.4
Virginia	4,458	32.1	12.1	14.0	13.0	10.0	5.9	3.7	9.2
Washington	1,849	36.6	11.1	12.0	7.9	12.2	5.7	4.8	9.8
West Virginia	2,403	34.1	11.7	14.6	9.9	9.6	7.1	4.1	8.9
Wisconsin	3,999	36.4	12.4	9.5	8.9	15.1	4.7	4.4	8.7
Wyoming	349	43.0	8.0	7.4	8.9	16.0	6.0	4.6	6.0

COPD = chronic obstructive pulmonary disease.

Table D-3
Most common conditions associated with potentially avoidable hospitalizations by state—dually eligible beneficiaries in skilled nursing facilities, 2005

Location	Number of potentially avoidable hospitalizations	% pneumonia	% congestive heart failure	% urinary tract infection	% dehydration	% falls/trauma	% COPD asthma	% skin ulcers cellulitis	% all other conditions
U.S.	73,468	30.5	16.8	11.7	12.9	5.2	5.5	5.9	11.6
Alabama	1,377	29.9	17.8	11.5	12.3	5.2	6.0	4.4	12.9
Alaska	6	33.3	0.0	16.7	0.0	16.7	16.7	16.7	0.0
Arkansas	955	31.9	16.2	9.6	12.7	6.3	5.9	6.7	10.7
California	5,717	36.6	13.8	10.9	12.1	3.7	4.7	7.6	10.5
Colorado	313	35.5	12.5	9.9	9.6	11.8	4.8	5.4	10.5
Connecticut	2,169	36.3	16.6	11.4	12.6	5.3	5.5	3.9	8.5
Delaware	205	28.3	17.6	14.1	13.7	3.9	5.4	4.9	12.2
District of Columbia	181	30.9	15.5	13.3	17.7	1.7	1.1	5.5	14.4
Florida	4,739	24.8	18.9	11.4	13.9	5.6	6.1	5.2	14.1
Georgia	1,909	32.6	15.6	11.0	14.4	5.2	4.9	5.2	11.2
Hawaii	54	51.9	9.3	5.6	9.3	3.7	7.4	5.6	7.4
Idaho	136	42.6	14.0	7.4	5.1	8.8	5.1	5.1	11.8
Illinois	3,957	30.1	15.5	11.4	12.4	4.6	5.0	7.3	13.8
Indiana	1,676	30.8	17.8	11.3	12.2	5.6	5.3	5.2	11.8
Iowa	464	31.3	16.8	6.7	13.8	8.0	5.0	8.2	10.3
Kansas	607	33.1	16.6	9.4	12.5	7.2	4.8	5.6	10.7
Kentucky	1,647	35.8	19.7	10.4	10.5	5.5	6.5	3.9	7.8
Louisiana	2,592	25.2	16.0	15.6	11.5	4.0	5.4	11.2	11.0
Maryland	1,011	29.5	16.4	11.9	14.1	4.1	5.1	5.4	13.5
Massachusetts	2,277	30.9	14.5	11.2	14.9	5.1	4.9	3.6	15.0
Michigan	2,166	29.0	19.3	11.4	13.3	5.0	5.1	5.3	11.6
Minnesota	440	25.9	21.1	8.2	12.3	8.9	7.5	5.2	10.9
Mississippi	1,740	26.7	16.9	13.9	13.9	3.7	6.4	5.8	12.8

(continued)

Table D-3 (continued)
Most common conditions associated with potentially avoidable hospitalizations by state—dually eligible beneficiaries in skilled nursing facilities, 2005

Location	Number of potentially avoidable hospitalizations	% pneumonia	% congestive heart failure	% urinary tract infection	% dehydration	% falls/trauma	% COPD asthma	% skin ulcers cellulitis	% all other conditions
Missouri	1,920	28.0	19.7	9.3	11.8	6.4	4.9	6.1	13.8
Montana	91	28.6	16.5	7.7	9.9	8.8	7.7	8.8	12.1
Nebraska	431	32.3	17.9	10.0	8.8	7.9	7.9	7.4	7.9
Nevada	157	31.8	17.8	5.7	12.7	3.2	7.6	7.6	13.4
New Hampshire	160	32.5	16.3	8.8	6.9	6.9	3.8	6.3	18.8
New Jersey	2,796	26.1	16.9	13.7	14.7	3.4	6.1	6.3	12.7
New Mexico	217	35.5	10.6	11.5	8.3	6.9	4.6	7.8	14.7
New York	8,033	31.8	16.0	11.5	12.2	5.5	5.9	4.8	12.2
North Carolina	2,018	30.9	18.3	12.2	15.3	4.8	4.7	4.9	8.9
North Dakota	147	37.4	15.6	4.8	12.9	8.2	6.1	6.1	8.8
Ohio	3,273	29.7	19.2	10.2	14.6	4.2	5.5	4.2	12.3
Oklahoma	923	29.8	14.0	10.1	12.1	7.6	6.4	6.6	13.4
Oregon	167	28.1	15.6	9.0	15.6	6.0	7.8	6.0	12.0
Pennsylvania	2,906	27.7	18.8	13.1	13.2	4.2	5.8	5.8	11.3
Rhode Island	298	31.2	18.5	13.1	13.1	3.0	6.4	4.0	10.7
South Carolina	1,166	27.5	16.0	14.9	16.5	5.1	3.7	5.7	10.6
South Dakota	137	38.0	17.5	3.6	10.2	8.0	7.3	5.8	9.5
Tennessee	2,539	32.2	17.2	12.9	11.5	5.6	5.4	4.8	10.6
Texas	5,677	29.3	17.1	13.7	11.3	5.6	5.2	8.3	9.5
Utah	124	36.3	16.1	11.3	8.1	8.1	4.0	8.1	8.1
Vermont	59	28.8	10.2	8.5	10.2	13.6	13.6	1.7	13.6
Virginia	1,660	29.9	15.1	11.6	16.4	6.0	5.3	4.2	11.6
Washington	721	33.1	12.2	9.6	13.7	7.5	5.7	6.4	11.8
West Virginia	554	30.9	17.5	8.7	13.5	7.9	7.6	4.3	9.6
Wisconsin	896	31.7	19.0	8.1	13.7	6.3	5.5	5.6	10.2
Wyoming	60	31.7	8.3	11.7	13.3	15.0	3.3	8.3	8.3

COPD = chronic obstructive pulmonary disease.

Table D-4
Potentially avoidable hospitalizations by state—dually eligible beneficiaries in aged or disabled HCBS waivers, 2005

Location	Number of potentially avoidable hospitalizations	% pneumonia	% congestive heart failure	% urinary tract infection	% dehydration	% falls/trauma	% COPD asthma	% skin ulcers cellulitis	% all other conditions
U.S.	68,625	—	33.0	15.7	18.4	—	23.6	—	9.4
Alabama	923	—	33.5	18.6	15.8	—	21.0	—	11.1
Alaska	209	—	30.1	19.6	21.1	—	23.0	—	6.2
Arkansas	1,716	—	34.8	17.1	17.1	—	22.6	—	8.4
California	1,482	—	35.1	17.4	19.4	—	21.2	—	7.0
Colorado	1,328	—	22.6	19.5	19.5	—	27.0	—	11.4
Connecticut	1,594	—	34.6	14.9	20.8	—	23.1	—	6.5
Delaware	194	—	34.5	18.0	14.9	—	22.7	—	9.8
District of Columbia	170	—	41.2	13.5	18.8	—	15.9	—	10.6
Florida	2,101	—	35.8	16.9	16.3	—	20.9	—	10.1
Georgia	2,367	—	34.6	19.1	19.4	—	18.5	—	8.4
Hawaii	183	—	25.7	25.1	22.4	—	15.8	—	10.9
Idaho	650	—	29.7	16.5	20.2	—	23.1	—	10.6
Illinois	7,213	—	35.5	10.3	16.1	—	25.3	—	12.8
Indiana	534	—	32.8	15.9	14.6	—	29.6	—	7.1
Iowa	1,517	—	32.9	12.5	19.2	—	29.9	—	5.5
Kansas	1,878	—	31.8	11.4	20.8	—	25.6	—	10.4
Kentucky	2,448	—	30.0	13.5	17.0	—	31.9	—	7.6
Louisiana	750	—	31.6	22.1	17.1	—	18.1	—	11.1
Maryland	659	—	28.1	23.2	22.2	—	17.1	—	9.4
Massachusetts	1,026	—	34.0	13.1	17.1	—	27.5	—	8.4
Michigan	1,437	—	34.2	16.3	17.7	—	22.9	—	8.8
Minnesota	1,191	—	26.6	14.1	21.4	—	24.7	—	13.2
Mississippi	2,037	—	36.4	14.7	17.2	—	23.3	—	8.3

(continued)

Table D-4 (continued)
Potentially avoidable hospitalizations by state—dually eligible beneficiaries in aged ordisabled HCBS waivers, 2005

Location	Number of potentially avoidable hospitalizations	% pneumonia	% congestive heart failure	% urinary tract infection	% dehydration	% falls/trauma	% COPD asthma	% skin ulcers cellulitis	% all other conditions
Missouri	3,864	—	36.5	10.5	19.6	—	25.9	—	7.5
Montana	282	—	23.0	22.0	14.9	—	18.8	—	21.3
Nebraska	437	—	38.9	14.9	18.5	—	19.9	—	7.8
Nevada	323	—	26.9	19.2	18.3	—	24.8	—	10.8
New Hampshire	391	—	27.6	19.9	15.6	—	28.4	—	8.4
New Jersey	152	—	36.2	16.4	27.6	—	7.9	—	11.8
New Mexico	288	—	28.5	27.4	15.3	—	20.1	—	8.7
New York	4	—	0.0	75.0	25.0	—	0.0	—	0.0
North Carolina	2,373	—	31.6	17.0	20.9	—	20.5	—	9.9
North Dakota	49	—	18.4	38.8	6.1	—	24.5	—	12.2
Ohio	7,164	—	33.0	14.0	17.6	—	28.6	—	6.7
Oklahoma	2,513	—	31.3	12.8	18.2	—	26.8	—	10.9
Oregon	1,035	—	28.9	19.3	19.6	—	20.0	—	12.2
Pennsylvania	3,517	—	35.3	18.2	17.6	—	20.0	—	9.0
Rhode Island	375	—	34.1	16.8	16.8	—	25.1	—	7.2
South Carolina	2,434	—	28.9	19.5	22.2	—	19.4	—	10.0
South Dakota	83	—	33.7	24.1	4.8	—	26.5	—	10.8
Tennessee	87	—	21.8	28.7	23.0	—	16.1	—	10.3
Texas	6,612	—	32.4	19.7	18.0	—	19.4	—	10.4
Utah	77	—	32.5	24.7	13.0	—	19.5	—	10.4
Vermont	86	—	36.0	12.8	16.3	—	32.6	—	2.3
Virginia	2,167	—	32.9	18.0	21.8	—	17.8	—	9.5
Washington	478	—	33.5	14.9	15.7	—	30.8	—	5.2
West Virginia	227	—	32.2	10.1	22.9	—	22.9	—	11.9
Wyoming	227	—	32.2	10.1	22.9	—	22.9	—	11.9

COPD = chronic obstructive pulmonary disease; HCBS = home and community-based services.

NOTE: Data not available for NY, WA, and WI.

**APPENDIX E:
HOSPITALIZATIONS AND POTENTIALLY AVOIDABLE HOSPITALIZATION
FROM NURSING FACILITIES, SKILLED NURSING FACILITIES, AND HCBS
WAIVERS: TOTALS, RELATIVE PROPORTION AND COSTS BY STATE AND
PAYOR**

Table E-1
Potentially avoidable hospitalizations by state—dually eligible beneficiaries in nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005

Location	All hospitalizations	Potentially avoidable hospitalizations	Percentage potentially avoidable hospitalizations of all hospitalizations
U.S.	958,837	382,846	39.9
Alabama	16,934	6,907	40.8
Alaska	1,085	269	24.8
Arkansas	18,390	7,495	40.8
California	50,719	20,980	41.4
Colorado	9,931	2,920	29.4
Connecticut	17,571	6,597	37.5
Delaware	2,774	1,160	41.8
District of Columbia	2,746	1,118	40.7
Florida	49,191	20,217	41.1
Georgia	29,229	12,312	42.1
Hawaii	1,509	473	31.3
Idaho	4,412	1,229	27.9
Illinois	75,672	26,292	34.7
Indiana	20,867	9,339	44.8
Iowa	14,156	5,254	37.1
Kansas	16,474	5,892	35.8
Kentucky	23,933	10,057	42.0
Louisiana	26,491	12,231	46.2
Maryland	13,559	5,235	38.6
Massachusetts	21,073	9,232	43.8
Michigan	27,749	10,916	39.3
Minnesota	9,550	2,598	27.2
Mississippi	22,090	9,133	41.3
Missouri	35,702	13,496	37.8
Montana	2,596	1,003	38.6
Nebraska	6,450	2,636	40.9
Nevada	3,079	1,003	32.6

(continued)

Table E-1 (continued)
Potentially avoidable hospitalizations by state—dually eligible beneficiaries in nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005

Location	All hospitalizations	Potentially avoidable hospitalizations	Percentage potentially avoidable hospitalizations of all hospitalizations
New Hampshire	3,444	1,265	36.7
New Jersey	27,185	12,443	45.8
New Mexico	3,322	1,328	40.0
New York	61,448	25,652	41.7
North Carolina	24,340	9,426	38.7
North Dakota	1,888	942	49.9
Ohio	62,577	23,299	37.2
Oklahoma	22,241	8,034	36.1
Oregon	6,405	1,607	25.1
Pennsylvania	43,975	17,497	39.8
Rhode Island	3,846	1,517	39.4
South Carolina	18,647	6,940	37.2
South Dakota	2,519	1,153	45.8
Tennessee	22,561	11,008	48.8
Texas	80,054	33,920	42.4
Utah	1,491	594	39.8
Vermont	1,018	406	39.9
Virginia	22,127	8,285	37.4
Washington	5,759	2,570	44.6
West Virginia	7,629	3,435	45.0
Wisconsin	10,760	4,895	45.5
Wyoming	1,669	636	38.1

HCBS = home and community-based services.

Table E-2
Total costs of hospitalizations and potentially avoidable hospitalizations for dually eligible beneficiaries in nursing facilities, skilled nursing facilities and HCBS waivers, by state, 2005

Location	All hospitalizations total dollars	Potentially avoidable hospitalizations total dollars	Percentage potentially avoidable hospitalizations of all hospitalizations	All hospitalizations average dollars per hospitalization	Potentially avoidable hospitalizations average dollars per potentially avoidable hospitalization
U.S.	9,482,019,526	3,126,998,895	33.0	9,889	8,168
Alabama	132,609,288	45,716,271	34.5	7,831	6,619
Alaska	13,269,807	2,696,808	20.3	12,230	10,025
Arkansas	151,691,057	50,109,674	33.0	8,249	6,686
California	724,797,118	252,702,840	34.9	14,290	12,045
Colorado	91,594,005	20,693,860	22.6	9,223	7,087
Connecticut	190,029,047	60,700,633	31.9	10,815	9,201
Delaware	28,408,533	10,137,239	35.7	10,241	8,739
District of Columbia	43,612,176	13,500,828	31.0	15,882	12,076
Florida	470,615,747	162,898,823	34.6	9,567	8,058
Georgia	251,453,702	84,340,488	33.5	8,603	6,850
Hawaii	17,763,127	4,463,569	25.1	11,771	9,437
Idaho	36,100,963	7,606,116	21.1	8,182	6,189
Illinois	715,096,583	202,105,024	28.3	9,450	7,687
Indiana	178,235,581	66,084,121	37.1	8,542	7,076
Iowa	106,482,918	31,768,196	29.8	7,522	6,046
Kansas	132,266,132	37,127,717	28.1	8,029	6,301
Kentucky	187,685,242	64,589,017	34.4	7,842	6,422

(continued)

Table E-2 (continued)
Total costs of hospitalizations and potentially avoidable hospitalizations for dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and HCBS waivers, by state, 2005

Location	All hospitalizations total dollars	Potentially avoidable hospitalizations total dollars	Percentage potentially avoidable hospitalizations of all hospitalizations	All hospitalizations average dollars per hospitalization	Potentially avoidable hospitalizations average dollars per potentially avoidable hospitalization
Louisiana	271,039,223	109,561,978	40.4	10,231	8,958
Maryland	164,455,338	52,222,861	31.8	12,129	9,976
Massachusetts	216,605,608	80,191,927	37.0	10,279	8,686
Michigan	283,246,938	90,839,343	32.1	10,207	8,322
Minnesota	92,822,047	19,360,612	20.9	9,720	7,452
Mississippi	181,836,927	61,401,026	33.8	8,232	6,723
Missouri	298,239,753	91,552,880	30.7	8,354	6,784
Montana	18,099,166	5,935,764	32.8	6,972	5,918
Nebraska	55,574,206	18,892,377	34.0	8,616	7,167
Nevada	43,363,760	11,039,358	25.5	14,084	11,006
New Hampshire	32,587,086	9,158,882	28.1	9,462	7,240
New Jersey	298,256,397	115,278,288	38.7	10,971	9,265
New Mexico	29,686,718	9,847,011	33.2	8,936	7,415
New York	880,605,753	300,354,099	34.1	14,331	11,709
North Carolina	217,316,073	68,666,075	31.6	8,928	7,285
North Dakota	13,001,891	5,267,893	40.5	6,887	5,592
Ohio	591,381,429	176,820,327	29.9	9,450	7,589
Oklahoma	206,828,597	61,572,125	29.8	9,299	7,664

(continued)

Table E-2 (continued)
Total costs of hospitalizations and potentially avoidable hospitalizations for dually eligible beneficiaries in nursing facilities, skilled nursing facilities, and HCBS waivers, by state, 2005

Location	All hospitalizations total dollars	Potentially avoidable hospitalizations total dollars	Percentage potentially avoidable hospitalizations of all hospitalizations	All hospitalizations average dollars per hospitalization	Potentially avoidable hospitalizations average dollars per potentially avoidable hospitalization
Oregon	59,042,465	11,134,248	18.9	9,218	6,929
Pennsylvania	427,335,530	141,722,182	33.2	9,718	8,100
Rhode Island	38,545,816	12,379,161	32.1	10,022	8,160
South Carolina	162,297,411	47,625,496	29.3	8,704	6,862
South Dakota	17,402,339	6,528,216	37.5	6,908	5,662
Tennessee	176,338,440	72,065,156	40.9	7,816	6,547
Texas	803,531,257	282,251,389	35.1	10,037	8,321
Utah	13,791,908	4,540,744	32.9	9,250	7,644
Vermont	9,294,236	3,109,966	33.5	9,130	7,660
Virginia	186,112,804	56,499,983	30.4	8,411	6,820
Washington	58,812,832	21,443,472	36.5	10,212	8,344
West Virginia	54,306,483	20,948,129	38.6	7,118	6,098
Wisconsin	94,616,655	37,139,144	39.3	8,793	7,587
Wyoming	13,933,412	4,407,560	31.6	8,348	6,930

HCBS = home and community-based services.

Table E-3
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries in nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005

Location	All hospitalizations total Medicare dollars	Potentially avoidable hospitalizations total Medicare dollars	Percentage potentially avoidable hospitalizations of all hospitalizations Medicare dollars	All hospitalizations total Medicaid dollars	Potentially avoidable hospitalizations total Medicaid dollars	Percentage potentially avoidable hospitalizations of all hospitalizations Medicaid dollars
U.S.	9,126,275,496	3,003,950,868	32.9	355,744,030	123,048,027	34.6
Alabama	124,689,417	42,878,987	34.4	7,919,871	2,837,284	35.8
Alaska	12,724,846	2,581,272	20.3	544,961	115,536	21.2
Arkansas	142,019,488	46,425,665	32.7	9,671,569	3,684,009	38.1
California	705,384,049	245,469,632	34.8	19,413,069	7,233,208	37.3
Colorado	89,682,314	20,248,138	22.6	1,911,691	445,722	23.3
Connecticut	182,102,366	58,216,223	32.0	7,926,681	2,484,410	31.3
Delaware	26,881,483	9,453,944	35.2	1,527,050	683,295	44.7
District of Columbia	40,934,561	12,550,020	30.7	2,677,615	950,808	35.5
Florida	451,195,606	155,083,782	34.4	19,420,141	7,815,041	40.2
Georgia	239,883,404	79,805,255	33.3	11,570,298	4,535,233	39.2
Hawaii	16,397,570	4,093,104	25.0	1,365,557	370,465	27.1
Idaho	33,289,301	6,796,999	20.4	2,811,662	809,117	28.8
Illinois	696,042,901	197,373,400	28.4	19,053,682	4,731,624	24.8
Indiana	174,940,198	64,793,904	37.0	3,295,383	1,290,217	39.2
Iowa	98,766,824	29,286,645	29.7	7,716,094	2,481,551	32.2
Kansas	127,106,187	35,349,945	27.8	5,159,945	1,777,772	34.5

(continued)

Table E-3 (continued)
Potentially avoidable hospitalization costs by state—dually eligible beneficiaries in nursing facilities, skilled nursing facilities and aged or disabled HCBS waivers, 2005

Location	All hospitalizations total Medicare dollars	Potentially avoidable hospitalizations total Medicare dollars	Percentage potentially avoidable hospitalizations of all hospitalizations	All hospitalizations total Medicaid dollars	Potentially avoidable hospitalizations total Medicaid dollars	Percentage potentially avoidable hospitalizations of all hospitalizations
Kentucky	185,066,990	63,678,094	34.4	2,618,252	910,923	34.8
Louisiana	262,493,701	105,358,690	40.1	8,545,522	4,203,288	49.2
Maryland	155,244,965	49,343,318	31.8	9,210,373	2,879,543	31.3
Massachusetts	211,964,988	78,607,128	37.1	4,640,620	1,584,799	34.2
Michigan	282,018,331	90,503,759	32.1	1,228,607	335,584	27.3
Minnesota	86,540,629	18,086,140	20.9	6,281,418	1,274,472	20.3
Mississippi	171,403,763	57,204,394	33.4	10,433,164	4,196,632	40.2
Missouri	291,770,873	89,856,485	30.8	6,468,880	1,696,395	26.2
Montana	16,700,140	5,474,467	32.8	1,399,026	461,297	33.0
Nebraska	51,524,888	17,597,072	34.2	4,049,318	1,295,305	32.0
Nevada	40,901,350	10,356,179	25.3	2,462,410	683,179	27.7
New Hampshire	30,592,975	8,602,609	28.1	1,994,111	556,273	27.9
New Jersey	288,755,057	111,108,201	38.5	9,501,340	4,170,087	43.9
New Mexico	28,514,619	9,475,826	33.2	1,172,099	371,185	31.7
New York	830,575,108	283,526,664	34.1	50,030,645	16,827,435	33.6
North Carolina	213,872,070	67,526,593	31.6	3,444,003	1,139,482	33.1
North Dakota	12,553,664	5,097,698	40.6	448,227	170,195	38.0

(continued)

Table E-3 (continued)
**Potentially avoidable hospitalization costs by state—dually eligible beneficiaries in nursing facilities, skilled nursing facilities
and aged or disabled HCBS waivers, 2005**

Location	All hospitalizations total Medicare dollars	Potentially avoidable hospitalizations total Medicare dollars	Percentage potentially avoidable hospitalizations of all hospitalizations	All hospitalizations total Medicaid dollars	Potentially avoidable hospitalizations total Medicaid dollars	Percentage potentially avoidable hospitalizations of all hospitalizations
Ohio	550,624,351	163,525,248	29.7	40,757,078	13,295,079	32.6
Oklahoma	192,805,217	56,907,773	29.5	14,023,380	4,664,352	33.3
Oregon	58,529,641	11,062,606	18.9	512,824	71,642	14.0
Pennsylvania	410,887,049	135,752,346	33.0	16,448,481	5,969,836	36.3
Rhode Island	36,815,526	11,947,339	32.5	1,730,290	431,822	25.0
South Carolina	158,401,135	46,446,244	29.3	3,896,276	1,179,252	30.3
South Dakota	16,560,257	6,134,800	37.0	842,082	393,416	46.7
Tennessee	174,916,789	71,436,554	40.8	1,421,651	628,602	44.2
Texas	788,043,640	276,227,034	35.1	15,487,617	6,024,355	38.9
Utah	13,372,925	4,362,196	32.6	418,983	178,548	42.6
Vermont	8,783,943	2,924,904	33.3	510,293	185,062	36.3
Virginia	180,996,370	55,022,302	30.4	5,116,434	1,477,681	28.9
Washington	57,481,034	20,956,597	36.5	1,331,798	486,875	36.6
West Virginia	53,447,596	20,620,053	38.6	858,887	328,076	38.2
Wisconsin	89,029,445	34,732,797	39.0	5,587,210	2,406,347	43.1
Wyoming	13,045,950	4,081,844	31.3	887,462	325,716	36.7

HCBS = home and community-based services.