Overview

The Policy and Data Analysis Group (PDAG) conducted a series of studies on the prevalence and cost of potentially avoidable hospitalizations (PAHs) for beneficiaries who are eligible for both Medicare and full Medicaid benefits (dual eligibles). Our research shows that 26% of all hospitalizations for this population may have been avoidable, either because the condition could have been prevented, or because the condition could have been treated outside of a hospital. (For more, click below.) Roughly one in ten dual eligibles had at least one PAH over the course of a year. (For more, click below.)

Reducing the number of hospitalizations would improve care for beneficiaries and likely lead to a meaningful decrease in Medicare spending. Dual eligibles in the top decile of spending are responsible for a disproportionate share of all expenditures. Data reveal that inpatient hospital use was the major driver for higher spending. (For more, click below.)

The overall costs of PAHs for dual eligibles are striking. Our research shows that PAHs for dual eligibles accounted for 3% of all Medicare spending on inpatient care in 2005; if this percentage has remained constant since then, the total costs in 2011 would be roughly $7 billion to $8 billion. (For more, click below.)

Table 1: Selected Findings

Percentage of Hospitalizations That Were Potentially Avoidable	26%
Percentage of Fully Dual Eligibles With at Least One PAH	9%
Percentage of All Medicare Hospital Costs from Fully Dual Eligible PAHs	3%
2011 Projected Costs Attributable to Fully Dual Eligible PAHs	$7-8 Billion

The study suggests three important areas of focus for policymakers.

1. *Differences Across Settings*: PAHs are most likely to occur for dual eligibles in a skilled nursing facility (SNF) (an estimated 942 per 1,000 person years). PAH rates are significantly lower for dual eligibles that live in a nursing facility (338 per 1,000 person years), live in the community and receive home- and community-based services (HCBS) through a waiver program (250 per 1,000 person years), or live in the community without being in an HCBS waiver (88 per 1,000 person years). These differences, while valuable to consider, should be viewed with caution due to differences in length of stay and beneficiaries' health across settings. (For more, click below.)

2. *Variation Across States*: The PAH rate differs almost fourfold across states, from the lowest (65 per 1,000 person years, in Alaska) to the highest (231 per 1,000 person years, in Louisiana). (For more, click below.)

3. *Focus on Select Conditions:* We found that just five conditions accounted for over 80% of PAHs: congestive heart failure (CHF), chronic obstructive pulmonary disease/asthma (COPD), pneumonia, dehydration, and urinary tract infections**.** (For more, click below.) Pneumonia was responsible for nearly one-third of the PAHs for dual eligibles in nursing facilities and SNFs, while COPD and CHF were the leading conditions for dual eligibles in HCBS waivers or otherwise in the community. (For more, click below.)

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1. Overview of Research Efforts on PAHs

Over the past three years, PDAG has conducted several research projects on the dual eligible population. A study conducted by PDAG, Office of Research, Development, and Information (ORDI), and Center for Medicaid, CHIP and Survey & Certification (CMCS) on high cost duals showed that beneficiaries in the top decile of spending are responsible for a disproportionate share of all expenditures. Inpatient hospital use was the major driver for higher spending. The data source for this work is the 2004 Medicare and Medicaid linked file, and the study population was fee-for-service beneficiaries.

As a result of this work, PDAG awarded a contract to examine how many of these hospitalizations may have been avoidable. Research Triangle Institute (RTI) completed a lengthy report on PAHs across three settings, nursing facilities, skilled nursing facilities, and home and community based waivers. The report, "Cost Drivers for Dually Eligible Beneficiaries: Potentially Avoidable Hospitalizations from Nursing Facility, Skilled Nursing Facility, and Home and Community-Based Services Waiver Programs" can be accessed on the CMS website. (For external link, click here.) The data source is the 2005 Medicare and Medicaid linked file, and the study population was fee-for-service beneficiaries who received care in these settings.

For this Policy Insight brief, PDAG expanded the study population to all fee-for-service dual eligible beneficiaries. The Policy Insight brief examines the prevalence and cost of PAHs across settings, geographic areas, and by type of condition.

1.1 Methodology for the Data Included in This Report

The data in this brief are from the most recent work performed by PDAG unless stated otherwise. Nearly 85% of all beneficiaries (5.6 million of the total 6.6 million) who were eligible for full Medicare and Medicaid benefits for at least one month were included. The file includes all persons enrolled in the Medicare program in the calendar year 2005.

The sample for this analysis did not include roughly 15% of dual eligible beneficiaries, because they were either in managed care programs, lived in states that did not report data, or had more than one Medicaid identification number in the same state.

2. Overall Impact of Preventable Hospitalizations

2.1 Inpatient Hospitalizations for the Dual Eligible Population

Among the study sample, 27% of beneficiaries had at least one hospitalization. The average hospitalization cost $10,226, with 96% ($9,815) borne by the Medicare program. Medicare is the primary payer for inpatient hospital services, while the Medicaid amount primarily represents co-payments.

Table 2: Inpatient Hospitalizations for Dual Eligible Population

Population	5,569,903
Percentage With at Least One Hospitalization	27%
Total hospitalizations	2,691,276
▪ Total costs (in billions)	$27.5
▪ Hospitalization rate (per 1,000 person years)	574
▪ Average length of stay (days)	7.1
▪ Average Medicare cost	$9,815
▪ Average Medicaid cost	$411

Source: CMS analysis of 2005 Medicare and Medicaid linked file

2.2 PAH for the Dual Eligible Population

Of the roughly 2.7 million hospitalizations, almost 700,000 or 26%, 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. For our sample population, the overall costs for potentially avoidable hospitalizations were $5.6 billion in 2005, and 96% of these costs were borne by the Medicare program.

To put the expenditure figure of $5.6 billion for PAHs into more perspective, it is helpful to view in terms of overall Medicare spending on hospital services. In 2005, Medicare spent $180 billion on hospital services, according to the CMS Office of the Actuaries' National Health Expenditure data (for external link, click here). From our sample alone (which only includes 85% of dual eligibles), hospitalizations that were potentially avoidable constituted 3% of all Medicare hospital expenditures.

In 2011, OACT estimates Medicare hospital costs of roughly $250 billion. Assuming the PAH share of Medicare hospital costs has remained constant, the estimated costs of PAHs for 2011 would be $7 billion to $8 billion.

Table 3: Summary Statistics on Dual Eligible Population and PAHs

Population	5,569,903
Percentage of Hospitalizations That Were Potentially Avoidable	26%
Percentage of Dual Eligibles With at Least One PAH	9%
Percentage of All Medicare Hospital Costs from Dual Eligible PAHs	3%
Potentially avoidable hospitalizations	699,818
▪ Total costs (in billions)	$5.6
▪ Potentially avoidable hospitalization rate (per 1,000 person-years)	151
▪ Average length of stay for (days)	6.1
▪ Average Medicare cost for potentially avoidable hospitalizations	$7,665
▪ Average Medicaid cost for potentially avoidable hospitalizations	$333
2011 Projected Costs Attributable to Dual Eligible PAHs	$7-$8 Billion

Source: CMS analysis of 2005 Medicare and Medicaid linked file

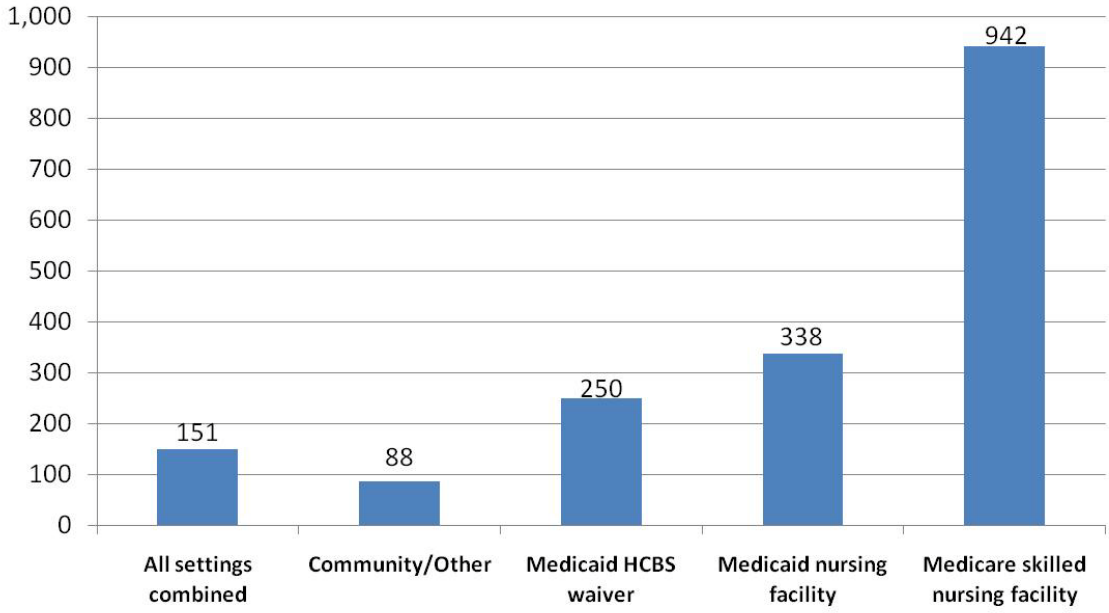
3. PAH Differences across Settings

3.1 Potentially Avoidable Hospitalizations Are Most Likely to Occur in a Skilled Nursing Facility

For every day spent in a particular setting, the potentially avoidable hospitalization rate is highest among dual eligibles in a skilled nursing facility setting (942 per 1,000 person years), while lowest among those in the community but not in HCBS (88 per 1,000 person years). The rate is 338 per 1,000 person years for those in a nursing facility, while it is 250 per 1,000 person years for those in HCBS.

It should be noted that beneficiaries spend far fewer days in skilled nursing facilities than any other setting due to Medicare coverage limitations and the key role SNFs play in stabilizing and rehabilitating complex patients. Further, these rates do not adjust for the generally higher acuity levels of SNF beneficiaries or the fact that most SNF care immediately follows a hospital stay – so many of the SNF PAHs may also be readmissions.

Table 4: Differences across Settings
(Expressed per 1,000 person-years to adjust for differences in length of stay)



Source: CMS analysis of 2005 Medicare and Medicaid linked file

3.1.1 Explanation of Person Year Metric

The metric created by RTI adjusts per 1,000 person years, and is used because the length of stay varies across settings. It is a method commonly used by epidemiologists to determine incidence over a limited period of time. The method allows researchers to standardize events by time. A higher rate in a setting indicates that, on average, a person on any given day in that setting would be more likely to have a PAH than those in a lower rate setting.

To illustrate the use of person years, an example may be helpful. For nursing home beneficiaries, the potentially avoidable hospitalization rate is 338 per 1,000 person years At a nursing home, if three beds are full for the entire year, on average, the odds are that one person from those three beds will have a potentially avoidable hospitalization.

3.2 Over the Course of the Year – The Odds of a Potentially Avoidable Hospitalization Highest for the Nursing Home Setting

The percentage of dually eligible beneficiaries who experienced at least one potentially avoidable hospitalization was 9.1%. The percentage is highest for those in nursing home settings, 16.4%, followed by HCBS at 12.5%, skilled nursing facility at 9.4%, and those in the community but not in HCBS at 5.2%.

3.2.1 **Explanation for Setting Differences between Rates and Percentages**

As noted above, while the skilled nursing facility setting has the highest potentially avoidable hospitalization rate, beneficiaries often do not spend much time in this setting. In contrast, those in nursing facilities have more opportunities (more days in the setting) for a potentially avoidable hospitalization; and as a result, have a higher percentage of beneficiaries with at least one of these events.

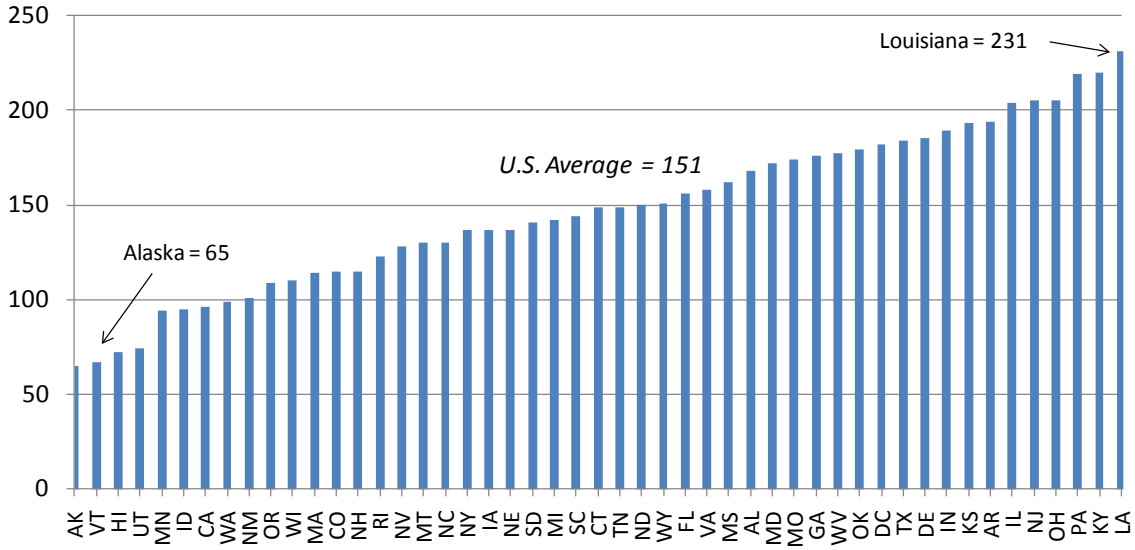
4. Variation Across States

4.1 PAH Rates Across States

There is almost a fourfold difference from the lowest (65 per 1,000 person years, in Alaska) to the highest rate of potentially avoidable hospitalizations (231 per 1,000 person years, in Louisiana). While the data show significant variation across states, this study does not control for differences in patient health across states.

The table below shows the PAH rate across all 50 states. The underlying data for all 50 states can be seen in section 4.2. Also included is the percentage of all PAHs for those states.

Table 5: Variation across States
(Expressed per 1,000 person-years to adjust for differences in length of stay)



Source: CMS analysis of 2005 Medicare and Medicaid linked file

4.2 PAH Differences for States across Settings

The states with the highest and lowest PAH rates also typically rate similarly across settings. The table below shows the top five performing states for each setting colored in green and the five worst performing states in red. The states are sorted by those with the highest PAH rate across all settings to the lowest rate.

Table 6: Potentially avoidable hospitalizations by source and state—dually eligible beneficiaries from aged or disabled, by hospitalization rate, 2005

Hospitalization rate (per 1,000 person-years)^^ -- Lowest 5 States in Green, Highest 5 in Red

State	All Duals	NF	SNF	HCBS	Other/Community
U.S.	**151**	**338**	**942**	**250**	**88**
Louisiana	231	551	1,253	301	115
Kentucky	220	463	1,126	377	116
Pennsylvania	219	318	1,025	317	90
New Jersey	205	446	1,464	2,423	104
Ohio	205	309	1,011	315	102
Illinois	204	395	1,196	248	94
Arkansas	194	447	1,075	281	90
Kansas	193	344	928	212	78
Indiana	189	306	828	270	120
Delaware	185	350	1,298	211	83
Texas	184	414	997	266	89
District of Columbia	182	443	1,215	379	117
Oklahoma	179	444	1,202	272	86
West Virginia	177	393	895	348	112
Georgia	176	378	970	265	97
Missouri	174	365	1,048	245	99
Maryland	172	352	1,154	271	97
Alabama	168	337	869	226	103
Mississippi	162	487	1,102	271	105
Virginia	158	308	754	307	90
Florida	156	345	973	252	97
Wyoming	151	247	634	231	63
North Dakota	150	242	615	197	80
Connecticut	149	202	704	204	67
Tennessee	149	409	1,018	253	110
South Carolina	144	325	908	279	97
Michigan	142	280	984	236	99
South Dakota	141	255	687	121	67
Iowa	137	268	684	201	56
Nebraska	137	287	646	177	71
New York	137	293	814	*	92
Montana	130	206	556	126	90
North Carolina	130	312	758	279	95
Nevada	128	264	793	241	77
Rhode Island	123	320	1,063	264	61
Colorado	115	215	668	172	50
New Hampshire	115	162	624	228	58
Massachusetts	114	290	782	271	72
Wisconsin	110	197	725	*	74
Oregon	109	180	826	137	49
New Mexico	101	236	883	177	64
Washington	99	228	756	*	73
California	96	336	1,008	209	68
Idaho	95	185	530	139	42
Minnesota	94	262	815	142	58
Utah	74	156	574	145	52
Hawaii	72	133	478	166	58
Vermont	67	147	553	133	45
Alaska	65	143	195	173	46

** Data unreliable; Note, Arizona and Maine also not included*

^^ per 1,000 person year metric can be explained as follows. The national rate for NF is 338. On average, if three persons were to stay in a nursing facility for 365 days in the year, roughly one would have a PAH.

Source: CMS analysis of the 2005 Medicare and Medicaid linked file

5. Leading PAH Conditions

5.1 Five Conditions Are Responsible for Over 80% of the Potentially Avoidable Hospitalizations

Congestive heart failure, chronic obstructive pulmonary disease/asthma, pneumonia, dehydration, and urinary tract infections were responsible for over 80% of potentially avoidable hospitalizations. For all dually eligible beneficiaries, the two leading conditions were congestive heart failure (22.9%) and chronic obstructive pulmonary disease/asthma (17.0%).

Table 7: PAHs Primarily Attributable to Select Conditions

Condition	Potentially avoidable hospitalizations	Percentage distribution
All	699,818	100.0%
Congestive heart failure	160,397	22.9%
COPD, Asthma	118,936	17.0%
Dehydration	103,024	14.7%
Pneumonia	101,357	14.5%
Urinary tract infection	87,296	12.5%
Sum of subgroup	571,010	81.6%

Source: CMS analysis of 2005 Medicare and Medicaid linked file

5.2 PAH Conditions by Setting

5.2.1 Methodological Note: Different List of Conditions across Settings

It is important to note that the list of conditions and their associated ICD-9 codes used to define PAHs differs for those in institutions (skilled nursing facilities and nursing facilities) and for those in HCBS programs or otherwise in the community. The conditions used for HCBS and Other/Community settings are a subset of those used for skilled nursing facilities and nursing facilities.

In the report, "Cost Drivers for Dually Eligible Beneficiaries: Potentially Avoidable Hospitalizations from Nursing Facility, Skilled Nursing Facility, and Home and Community-Based Services Waiver Programs", RTI explains its rationale for using a shorter list for those in HCBS or otherwise in the community. "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."[1]

The major omission was pneumonia, which accounts for nearly one-third of PAHs for those in nursing facilities and skilled nursing facilities. Other omissions include altered mental state, anemia, diarrhea, falls and trauma, psychosis, and skin ulcers. The table below flags these conditions with an asterisk.

5.2.2 **Setting-Specific Figures by Condition**

There were differences by setting in the conditions that were responsible for potentially avoidable hospitalizations. In general, the leading causes were similar for beneficiaries in nursing facilities and skilled nursing facilities, while those in HCBS and otherwise in the community had fairly similar breakdowns by condition.

For those in nursing facilities and in skilled nursing facilities, pneumonia was the leading cause for a PAH, accounting for nearly one-third of all cases. The percentages were also similar for urinary tract infections and dehydration. However, some differences were seen between the two settings. Congestive heart failure accounted for 11.6% of potentially avoidable hospitalizations from nursing facility stays, but 16.8% from 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. This underscores that the populations are somewhat distinct.

For those in HCBS and otherwise in the community, three conditions accounted for nearly 75% of all PAHs - chronic obstructive pulmonary disease, COPD/asthma, and dehydration. The biggest difference was observed with urinary tract infection, where those in HCBS had a significantly higher PAH percentage than those otherwise in the community.

The table below shows the percentage of potentially avoidable hospitalizations by condition and setting. The top five conditions by setting are highlighted in red.

[1] Walsh, E., et. al, "Cost Drivers for Dually Eligible Beneficiaries: Potentially Avoidable Hospitalizations from Nursing Facility, Skilled Nursing Facility, and Home and Community-Based Services Waiver Programs," August 2010. Link to CMS website: http://www.cms.gov/Reports/Downloads/costdriverstask2.pdf

Table 8: Percentage of Potentially Avoidable Hospitalizations by Condition and Setting

	All Duals	NF	SNF	HCBS	Other/Community
Altered mental status, acute confusion, delirium *	0.3	0.6	0.6	*	*
Anemia *	1.0	2.2	2.3	*	*
COPD, asthma	17.0	6.0	5.5	23.6	26.6
Congestive heart failure	22.9	11.6	16.8	33.0	30.8
Constipation, impaction	1.4	1.1	0.8	2.0	1.6
Dehydration	14.7	10.3	12.9	18.4	17.7
Diarrhea, gastroenteritis, C. Difficile *	0.9	1.6	3.0	*	*
Falls/trauma *	3.8	9.4	5.2	*	*
Hypertension	1.0	0.2	0.2	1.0	1.8
Pneumonia *	14.5	32.8	30.5	*	*
Poor glycemic control	2.4	0.7	0.7	2.0	4.1
Psychosis, agitation, organic brain syndrome *	0.6	1.4	1.1	*	*
Seizures	4.2	2.6	2.1	3.6	6.1
Skin ulcers, cellulitis *	2.3	4.9	5.9	*	*
Urinary tract infection	12.5	14.2	11.7	15.7	10.6
Weight loss and malnutrition	0.6	0.4	0.8	0.7	0.7

* Note 1: these conditions were not included for beneficiaries in HCBS or otherwise in the community.

^ Note 2: The top five conditions by setting are highlighted in red.

Source: CMS analysis of 2005 Medicare and Medicaid linked file