CHCS

Center for
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FACES OF MEDICAID
DATA SERIES

Multimorbidity Pattern Analyses and Clinical Opportunities: *Asthma and/or Chronic Obstructive Pulmonary Disease*

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This set of tables is part of the analysis, *Clarifying Multimorbidity to Improve Targeting and Delivery of Clinical Services for Medicaid Populations*, which was undertaken by the Center for Health Care Strategies and The Johns Hopkins University School of Medicine and Bloomberg School of Public Health to help policymakers identify intervention strategies to improve quality and reduce costs for Medicaid beneficiaries with multiple chronic conditions. For the full report, visit www.chcs.org.

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*The **Center for Health Care Strategies** (CHCS) is a nonprofit health policy resource center dedicated to improving health care quality for low-income children and adults, people with chronic illnesses and disabilities, frail elders, and racially and ethnically diverse populations experiencing disparities in care. CHCS works with state and federal agencies, health plans, providers and consumer groups to develop innovative programs that better serve Medicaid beneficiaries with complex and high-cost health care needs. Its program priorities are: enhancing access to coverage and services; improving quality and reducing racial and ethnic disparities; integrating care for people with complex and special needs; and building Medicaid leadership and capacity.*

Overview

This set of tables is part of the *Faces of Medicaid* analysis, *Clarifying Multimorbidity to Improve Targeting and Delivery of Clinical Services for Medicaid Populations*, undertaken by the Center for Health Care Strategies (CHCS) and The Johns Hopkins University School of Medicine and Bloomberg School of Public Health. The analysis sought to help policymakers identify intervention strategies with the potential to both improve quality and reduce costs for adult Medicaid beneficiaries with multiple chronic conditions.

The following tables summarize multimorbidity data on asthma and/or chronic obstructive pulmonary disease (COPD) for adult Medicaid-only beneficiaries with disabilities under the age of 65 and inventory clinical opportunities for addressing multimorbidity associated with asthma and/or COPD. For this analysis, "multimorbidity patterns" are defined as the specific and often multiple conditions that a person has (e.g., a person with depression, hypertension, chronic pain, and asthma), as opposed to a simple tally of the number of conditions that someone has (e.g., a person with five chronic conditions). The tables are intended to aid policymakers in identifying subgroups of Medicaid beneficiaries who stand to benefit from targeted care management and tailoring intervention strategies to improve health outcomes and reduce costs. Contents include:

1. ***Multimorbidity Summary Table* (Table 1)**: This table lists the five most costly patterns of multimorbidity (based on total annual costs, excluding long-term care expenditures) for asthma and/or COPD. These data can be used to help prioritize care management opportunities to improve outcomes and control costs. Prevalence, costs, and hospitalization rates are summarized for:

    - Beneficiaries who *only* have the specific asthma and/or COPD pattern, without additional comorbidities.
    - Beneficiaries who have the specific asthma and/or COPD pattern *plus* potentially other comorbidities. In other words, all individuals represented in this group have the conditions specified in the stated multimorbidity pattern, but any individual may have other conditions as well. This broader approach has a greater likelihood of capturing all individuals with asthma and/or COPD and the identified comorbidities in the population.

2. ***Multimorbidity Pattern Table* (Table 2)**: This table details the 16 most prevalent multimorbidity patterns for asthma and/or COPD, including prevalence, cost, and hospitalization data for each. Data include beneficiaries who *only* have the specific conditions in each multimorbidity pattern.

3. ***Clinical Opportunities Table* (Table 3)**: A series of literature searches was conducted for the multimorbidity patterns that the analysis identified as high-priority opportunities from a prevalence, clinical, and cost perspective. In addition to presenting actionable, clinical opportunities for Medicaid stakeholders responsible for care management program design, this clinical opportunities table also helps identify gaps in knowledge around clinical management of these conditions. Literature is categorized as follows:

    - Clinical "pearls" that offer recommendations relevant to an aspect of care for individuals with the specified multimorbidity pattern;
    - Single disease-specific models that address processes important to caring for individuals with multimorbidity, such as care coordination and medication management;
    - Relevant clinical practice guidelines and systematic reviews; and
    - Evidence-based models for the specific multimorbidity pattern.

Table 1: Asthma and/or Chronic Obstructive Pulmonary Disease Multimorbidity Summary

This table lists the five most costly patterns of multimorbidity -- based on total annual costs, excluding long-term care expenditures – for asthma and/or COPD. These data can be used to help prioritize care management opportunities to improve outcomes and control costs.

Medicaid-Only Adult Beneficiaries with Disabilities, Under Age 65

	Multimorbidity Pattern	Prevalence among beneficiaries with asthma and/or chronic obstructive pulmonary disease	Prevalence among overall population	Per capita cost	Percent of total annual costs among beneficiaries with asthma and/or chronic obstructive pulmonary disease	Percent of total annual costs among overall population	Per capita hospitalizations
	Asthma and/or Chronic Obstructive Pulmonary Disease						
1	+ Psychiatric Disorders	4.51%	0.84%	$7,868	2.25%	0.62%	0.13
		71.34%	13.27%	$18,102	81.98%	22.68%	1.02
2	Asthma and/or COPD only (no comorbidities among conditions considered)	4.57%	0.85%	$3,745	1.09%	0.30%	0.11
		100.00%	18.60%	$15,753	100.00%	27.66%	0.89
3	+ Psychiatric Disorders, Schizophrenia	1.01%	0.19%	$15,710	1.01%	0.28%	0.46
		10.32%	1.92%	$26,154	17.13%	4.74%	1.79
4	+ Psychiatric Disorders, Chronic pain, Back or Spine Disorders	1.42%	0.26%	$9,970	0.90%	0.25%	0.26
		16.63%	3.09%	$20,699	21.86%	6.05%	1.28
5	+ Psychiatric Disorders, Drug and Alcohol Disorders, Schizophrenia	0.63%	0.12%	$21,658	0.87%	0.24%	1.53
		4.67%	0.87%	$31,149	9.24%	2.56%	2.77

Co-occurring conditions that were considered include: Depressive disorders, hypertension, coronary heart disease, asthma and/or COPD, back or spine disorders, antipsychotic or mood stabilizer drugs, drug and alcohol disorders, diabetes, anxiety disorder or benzodiazepam use, congestive heart failure, hepatitis or chronic liver disease, stroke, prednisone use, dizziness, gastrointestinal bleed, anticoagulation drugs (warfarin), chronic renal failure/end stage renal disease, HIV or AIDS, and personality disorders.

KEY

- Beneficiaries with only asthma and/or COPD and the specified multimorbidity pattern (no other comorbidities).
- Beneficiaries with asthma and/or COPD, the specified multimorbidity pattern, and potentially other additional comorbidities, varying by individual.

Table 2: Asthma and/or Chronic Obstructive Pulmonary Disease Multimorbidity Patterns

This table presents the 16 most prevalent co-occurring conditions for asthma and/or COPD (columns in the left half), and prevalence, hospitalization, and cost data for each pattern (columns in the right half). These data reveal patterns that are prime for targeted interventions across a number of variables of interest, including: population prevalence, per capita costs, and annual hospitalization rate. For each pattern, these variables are calculated for individuals who have the specified conditions and no other comorbidities. The condition columns are ordered from most prevalent (left) to least prevalent (right) in the asthma and/or COPD population. A checkmark represents the presence of the specified condition. Unless noted, all cost estimates exclude long-term care costs.

Medicaid-Only Adult Beneficiaries with Disabilities, Under Age 65

	Asthma and/or Chronic Obstructive Pulmonary Disease +																							
	Psychiatric disorders	Hypertension	Coronary heart disease	Drug and alcohol disorders	Chronic pain	Diabetes	Back or spine disorders	Congestive heart failure	Prednisone use	Stroke	Hepatitis or chronic liver disease	Home oxygen therapy	Dizziness	Schizophrenia	Chronic renal failure/end stage renal disease	HIV or AIDS	Developmental disorders	Pattern Prevalence, %[1]	Cumulative Prevalence, %	Annual Hospitalization Rate Per Capita	Per Capita Costs, excl. Long-term Care	% Total Annual Costs, excl. Long-term Care[2]	Cumulative % of Total Annual Costs, excl. Long-term Care	% Total Annual Long-Term Care Costs	Very High-Cost Prevalence, %[3]	High-Cost Prevalence, %[4]
1																		4.57%	4.57%	0.11	$3,745	1.09%	1.09%	2.00%	0.65%	3.23%
2	✓																	4.51%	9.09%	0.13	$7,868	2.25%	3.34%	2.52%	1.30%	11.01%
3	✓						✓											1.68%	10.76%	0.13	$6,746	0.72%	4.06%	0.32%	0.89%	10.42%
4	✓	✓																1.61%	12.37%	0.17	$7,859	0.80%	4.86%	0.79%	1.28%	14.12%
5		✓																1.54%	13.92%	0.11	$4,318	0.42%	5.29%	0.37%	0.67%	4.41%
6	✓				✓		✓											1.42%	15.34%	0.26	$9,970	0.90%	6.19%	0.39%	3.44%	21.39%
7	✓		✓															1.15%	16.49%	0.23	$8,038	0.59%	6.77%	0.52%	1.64%	13.59%
8	✓													✓				1.01%	17.50%	0.46	$15,710	1.01%	7.78%	1.40%	6.93%	33.91%
9	✓				✓													0.97%	18.47%	0.32	$10,488	0.65%	8.43%	0.60%	4.15%	18.62%
10							✓											0.97%	19.44%	0.10	$3,472	0.21%	8.64%	0.12%	0.56%	2.82%
11	✓			✓														0.92%	20.36%	0.65	$10,017	0.59%	9.23%	0.55%	3.93%	20.75%
12			✓															0.88%	21.25%	0.18	$4,580	0.26%	9.49%	0.29%	0.97%	5.16%
13	✓	✓	✓															0.87%	22.12%	0.34	$8,621	0.48%	9.96%	0.32%	1.70%	18.68%
14	✓		✓				✓											0.78%	22.89%	0.19	$7,574	0.37%	10.34%	0.19%	1.07%	12.84%
15	✓		✓		✓		✓											0.75%	23.65%	0.44	$12,205	0.58%	10.92%	0.23%	4.07%	25.55%
16	✓	✓					✓											0.73%	24.38%	0.15	$7,138	0.33%	11.25%	0.16%	1.33%	13.28%

KEY

- Index condition with no comorbidity in identified conditions.
- Patterns with the top three highest total annual costs.
- Patterns with the top three highest annual hospitalization rates.
- Patterns with the top three high-cost prevalence rates.

[1] Prevalence of this pattern among beneficiaries with asthma and/or COPD.
[2] $5.5 billion, excluding Long-Term Care costs, was spent by Medicaid on 349,478 disabled Medicaid-only beneficiaries with asthma and/or chronic obstructive pulmonary disease. Results are presented for the top 16 out of 12,899 total patterns observed for people with asthma and/or COPD.
[3] The proportion of beneficiaries with this specific multimorbidity pattern who are represented among beneficiaries in the top 1st to 5th percentile of costs.
[4] The proportion of beneficiaries with this specific multimorbidity pattern who are represented among beneficiaries in the top 5.01st to 20th percentile of costs.

Table 3: Asthma and/or Chronic Obstructive Pulmonary Disease Clinical Opportunities

The following table inventories evidence-based models of care for asthma and/or COPD and associated multimorbid patterns, including references published since 2000. This resource provides an actionable complement to the multimorbidity cost and prevalence data presented earlier. It is intended to guide Medicaid stakeholders in tailoring implementation strategies to improve care for beneficiaries with these multimorbidity patterns.

A bibliography of citations alphabetized by author is available at **www.chcs.org**.

Clinical pearl for specific multimorbidity pattern	Single-disease focused clinical care delivery model for multimorbid patients	Clinical practice guidelines or systematic review for multimorbidity pattern	Model for specific multimorbidity pattern
Asthma and/or COPD + Psychiatric Disorders, Schizophrenia			
	Shelledy 2009. In-home asthma management by respiratory therapists may improve utilization and quality of life.	Niesink 2007. Disease management may not be effective for COPD in general.	Landis 2007. Small pilot suggested generalist care managers improve care for people with Medicaid and depression, 50% of whom had asthma.
	Steuten 2009. Asthma and COPD disease management doesn't increase costs, and may improve outcomes.	Yorke 2006. Inconclusive data on psychological interventions for people with asthma.	Kunik 2007. Development of screening tool for anxiety and depression in people with chronic breathing disorders.
	Patel 2009. Small study of telephone intervention in older asthmatics may improve processes.		Simon 2005. Treating depression improves function and depression in people with COPD or diabetes.
	Huang 2009. Individualized education for older people may improve self-care and efficacy.		Kunik 2008. Cognitive behavioral therapy and COPD education improved quality of life and depression.
	Linden 2007. Pre-post study of Medicaid asthma disease management.		Jordan 2007. Depression treatment better for people with COPD and depression in mental health clinic.
	Afifi 2007. Disease management in Medicaid may decrease utilization.		Lehrer 2008. Pilot study for asthma and panic disorder improves outcomes.
	Schatz 2006. Limited interventions for asthma may be just as, or more, effective as care management.		Brown 2008. Brown Screening Tool for depression in asthma is reliable.
	Noble 2006. At-risk asthma registers may improve outcomes.		Lolak 2008. Pulmonary rehab improves anxiety and depression.
	Howard 2008. Restoring health may improve outcomes.		
	Vrijhoef 2007. Transfer to respiratory nurse may be justified.		
Asthma and/or COPD + Hypertension			
Le Jemtel 2007. People with COPD tolerate beta-blockers.	Meulepas 2007. Integrated primary care model may improve processes and maybe outcomes.	Salpeter 2005. Cardio selective b-blockers okay.	Petersen 2009. Hypertension P4P won't penalize people with complexity (e.g., COPD).

Clinical pearl for specific multimorbidity pattern	Single-disease focused clinical care delivery model for multimorbid patients	Clinical practice guidelines or systematic review for multimorbidity pattern	Model for specific multimorbidity pattern
	Casas 2006. Integrated care may prevent hospitalizations in COPD.	Niesink 2007. Disease management may not be effective for COPD in general.	
Asthma and/or COPD + Hypertension *(continued)*			
	Levin-Scherz 2006. P4P improves HEDIS scores.		
	Linden 2007. Pre-post study of Medicaid asthma disease management.		
	Afifi 2007. Disease management in Medicaid may decrease utilization		
Asthma and/or COPD + Drug or Alcohol			
		Van der meer 2001. Smoking cessation with psychosocial and pharmacological treatment superior.	
Asthma and/or COPD + Chronic Pain, Back or Spine			
		Puhan 2009. Lacasse 2006. Pulmonary rehabilitation may benefit people with multimorbidity.	Maltais 2008. Alexander 2008. Skumlien 2008. Spruit 2007. Pulmonary rehabilitation may be effective in people with multimorbidity.