

CHCS

Center for
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FACES OF MEDICAID
DATA SERIES

Multimorbidity Pattern Analyses and Clinical Opportunities: *Chronic Renal Failure/End-Stage Renal 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 with the potential to both 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 chronic renal failure/end-stage renal disease (ESRD) for adult Medicaid-only beneficiaries with disabilities under the age of 65 who are not eligible for Medicare and inventory potential clinical opportunities for addressing multimorbidity associated with chronic renal failure/ESRD. 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 chronic renal failure/ESRD. 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 chronic renal failure/ESRD pattern, without additional comorbidities.
 - Beneficiaries who have the specific chronic renal failure/ESRD 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 chronic renal failure/ESRD and the identified comorbidities in the population.
2. **Multimorbidity Pattern Table (Table 2):** This table details the 16 most prevalent multimorbidity patterns for chronic renal failure/ESRD, 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, these clinical opportunities tables also help 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: Chronic Renal Failure/ESRD Multimorbidity Summary

This table lists the five most costly patterns of multimorbidity -- based on total annual costs, excluding long-term care expenditures -- for chronic renal failure/ESRD. 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 chronic renal failure/ESRD	Prevalence among overall population	Per capita cost	Percent of total annual costs among beneficiaries with chronic renal failure/ESRD	Percent of total annual costs among overall population	Per capita hospitalizations
Chronic Renal Failure/ESRD							
1	Chronic Renal Failure/ESRD only (no comorbidities among conditions considered)	2.42%	0.06%	\$21,721	1.55%	0.12%	0.22
		100.00%	2.49%	\$33,929	100.00%	7.96%	1.75
2	✚Hypertension, Psychiatric Disorders, Coronary Heart Disease, Diabetes, Congestive Heart Failure	0.97%	0.02%	\$33,873	0.97%	0.08%	1.92
		12.62%	0.31%	\$51,344	19.09%	1.52%	3.46
3	✚Psychiatric Disorders	1.25%	0.03%	\$25,732	0.94%	0.08%	0.40
		60.04%	1.49%	\$38,081	67.39%	5.37%	2.11
4	✚Hypertension, Psychiatric Disorders, Diabetes	1.77%	0.04%	\$16,856	0.88%	0.07%	0.58
		30.82%	0.77%	\$39,212	35.62%	2.84%	2.41
5	✚Hypertension, Diabetes	2.50%	0.06%	\$11,310	0.83%	0.07%	0.33
		47.88%	1.19%	\$34,722	49.00%	3.90%	2.05

Co-occurring conditions that were considered include: Depressive disorders, hypertension, coronary heart disease, asthma and/or chronic obstructive pulmonary disease, 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 chronic renal failure/ESRD and the specified multimorbidity pattern (no other comorbidities).
- Beneficiaries with chronic renal failure/ESRD, the specified multimorbidity pattern, and potentially other additional comorbidities, varying by individual.

Table 2: Chronic Renal Failure/ESRD Multimorbidity Patterns

This table presents the 16 most prevalent co-occurring conditions for chronic renal failure/ESRD (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 rates. 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 chronic renal failure/ESRD 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

Chronic Renal Failure/ESRD +																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				
Hypertension	Psychiatric disorders	Coronary heart disease	Diabetes	Chronic pain	Congestive heart failure	Asthma and/or chronic obstructive pulmonary disease	Drug and alcohol disorders	Back or spine disorders	Stroke	Hepatitis or chronic liver disease	Prednisone use	Gastrointestinal bleed	Anticoagulation drugs (warfarin)	Dizziness	Home oxygen therapy	Antiepileptic drugs	HIV or AIDS	Hospital bed distributed	Non-stroke plegias and palsies									
1	✓		✓																	2.50%	2.50%	0.33	\$11,310	0.83%	0.83%	0.84%	2.66%	14.75%
2																				2.42%	4.91%	0.22	\$21,721	1.55%	2.38%	1.38%	2.04%	13.29%
3	✓	✓	✓																	1.77%	6.68%	0.58	\$16,856	0.88%	3.26%	1.25%	7.26%	29.06%
4	✓																			1.64%	8.32%	0.33	\$16,901	0.81%	4.07%	0.57%	2.75%	13.87%
5			✓																	1.37%	9.69%	0.28	\$13,687	0.55%	4.63%	0.34%	1.87%	14.82%
6	✓		✓	✓																1.28%	10.97%	0.65	\$17,475	0.66%	5.28%	0.65%	6.20%	23.28%
7		✓																		1.25%	12.21%	0.40	\$25,732	0.94%	6.23%	1.62%	5.84%	22.85%
8	✓	✓																		1.10%	13.31%	0.51	\$21,472	0.69%	6.92%	0.90%	5.47%	26.56%
9		✓	✓																	1.06%	14.37%	0.46	\$17,883	0.56%	7.48%	0.90%	5.66%	25.66%
10	✓	✓	✓	✓																1.06%	15.42%	1.03	\$21,510	0.67%	8.15%	0.64%	9.53%	37.93%
11	✓	✓	✓	✓	✓															0.97%	16.40%	1.92	\$33,873	0.97%	9.12%	1.11%	21.98%	47.03%
12	✓		✓	✓	✓															0.95%	17.34%	1.49	\$25,977	0.72%	9.85%	0.46%	16.74%	39.59%
13	✓		✓	✓	✓															0.48%	17.82%	1.08	\$22,428	0.32%	10.16%	0.25%	10.22%	36.89%
14	✓		✓																	0.48%	18.30%	0.60	\$22,029	0.31%	10.47%	0.14%	6.31%	25.23%
15	✓	✓	✓	✓	✓	✓														0.44%	18.74%	2.40	\$35,170	0.45%	10.93%	0.49%	28.43%	45.59%
16	✓	✓	✓	✓	✓															0.42%	19.16%	1.49	\$29,115	0.36%	11.29%	0.38%	19.80%	43.15%

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 chronic renal failure/ESRD .
² \$1.6 billion, excluding Long-Term Care costs, was spent by Medicaid on 46,718 disabled Medicaid-only beneficiaries with chronic renal failure/ ESRD. Results are presented for the top 16 out of 10,457 total patterns observed for people with chronic renal failure/ ESRD.
³ The proportion of beneficiaries with this specific multimorbidity pattern who are represented among beneficiaries in the top 1st to 5th percentile of costs in the overall population of Medicaid-only adult beneficiaries with disabilities.
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 in the overall population of Medicaid-only adult beneficiaries with disabilities.

Chronic Renal Failure/ESRD Clinical Opportunities

The following table inventories evidence-based models of care for chronic renal failure/ESRD 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 full 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
Chronic Renal Failure/ESRD + Diabetes			
Chan 2009. Audits and feedback were needed for structured care intervention to prevent death and or renal failure.	Perry 2005. Peer mentors can increase the completion of advance directives.	Cochrane 2005. ACE-I reduce the incidence of proteinuria.	
Wanner 2005. People with DM on hemodialysis do not achieve mortality benefit from atorvastatin.	Song 2009. Semi-structured interviews increased communication between patient and surrogates regarding end-of-life decisions with kidney failure.		
Chronic Renal Failure/ESRD + Psychiatric Conditions			
		Rabindranath 2005. Systematic review of antidepressants and other measures to treat depression with dialysis.	
Chronic Renal Failure/ESRD + Coronary Heart Disease			
Wanner 2005; Diabetics and non-diabetics on hemodialysis do not achieve mortality benefit from atorvastatin or rosuvastatin.		CARI 2005. ACE-inhibitors are first-line therapy for people with hypertension, diabetes and albuminuria.	
ACCORD group 2008. Intensive glucose lowering increases mortality in people with cardiovascular disease or high cardiovascular risk.			
West 2007. Motivational interviewing improves weight loss.			
Chronic Renal Failure/ESRD + Chronic Heart Failure			
	Perry 2005. See above.		
Chronic Renal Failure/ESRD + Hypertension			
	Song 2009. See above.	Cochrane 2005. ACE-inhibitors reduce the incidence of proteinuria in DM.	
		NKF KDOQI 2007. Recommends behavioral self-management coordination and repeated contacts with sustained support should involve both DM and CKD to achieve goals.	

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
Chronic Renal Failure/ESRD + Hypertension (continued)			
		NKF KDOQI 2007. Discusses management strategies for HTN in DM and CKD.	
Chronic Renal Failure/ESRD + Chronic Pain			
Salisbury 2009. Pain in dialysis improved by appropriate communication techniques and use of analgesic ladder.		Davison 2007. Review of pain management in dialysis patients.	