CHCS

Center for
Health Care Strategies, Inc.

FACES OF MEDICAID
DATA SERIES

Multimorbidity Pattern Analyses and Clinical Opportunities: *Schizophrenia*

December 2010

Cynthia Boyd, MD, MPH*
Bruce Leff, MD*
Carlos Weiss, MD, MHS*
Jennifer Wolff, PhD*
Rebecca Clark
Thomas Richards, MS

The Johns Hopkins University
**Co-Principal Investigators.*

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**.

Made possible through support from Kaiser Permanente.

Contents

*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 schizophrenia for adult Medicaid-only beneficiaries with disabilities under the age of 65 and inventory potential clinical opportunities for addressing multimorbidity associated with schizophrenia. 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 schizophrenia. 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 schizophrenia pattern, without additional comorbidities.
    - Beneficiaries who have the specific schizophrenia 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 schizophrenia and the identified comorbidities in the population.

2. ***Multimorbidity Pattern Table (Table 2)***: This table details the 16 most prevalent multimorbidity patterns for schizophrenia, 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: Schizophrenia Multimorbidity Summary

This table lists the five most costly patterns of multimorbidity -- based on total annual costs, excluding long-term care expenditures -- for schizophrenia. 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 schizophrenia	Prevalence among overall population	Per capita cost	Percent of total annual costs among beneficiaries with schizophrenia	Percent of total annual costs among overall population	Per capita hospitalizations
	Schizophrenia						
1	+Antipsychotic or mood stabilizer drugs, Depressive disorders	7.13%	0.61%	$13,282	5.02%	0.76%	0.24
		56.86%	4.85%	$22,579	68.12%	10.33%	1.26
2	+Antipsychotic or mood stabilizer drugs	8.88%	0.76%	$10,252	4.83%	0.73%	0.13
		87.00%	7.42%	$20,047	92.54%	14.04%	0.96
3	+Antipsychotic or mood stabilizer drugs, Depressive disorders, Anxiety disorder or benzodiazepam use	4.33%	0.37%	$15,834	3.64%	0.55%	0.44
		31.17%	2.66%	$25,790	42.65%	6.47%	1.72
4	+Antipsychotic or mood stabilizer drugs, Depressive disorders, Drug and alcohol disorders	2.03%	0.17%	$18,885	2.03%	0.31%	0.98
		19.92%	1.70%	$28,056	29.65%	4.50%	2.30
5	+Antipsychotic or mood stabilizer drugs, Depressive disorders, Anxiety disorder or benzodiazepam use, Drug and alcohol disorders	1.77%	0.15%	$20,806	1.96%	0.30%	1.46
		12.89%	1.10%	$30,668	20.98%	3.18%	2.79

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 schizophrenia and the specified multimorbidity pattern (no other comorbidities).
- ☐ Beneficiaries with schizophrenia, the specified multimorbidity pattern, and potentially other additional comorbidities, varying by individual.

Table 2: Schizophrenia Multimorbidity Patterns

This table presents the 16 most prevalent co-occurring conditions for schizophrenia (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 schizophrenia 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

	Schizophrenia +																			
	Antipsychotic or mood stabilizer drugs	Depressive disorders	Anxiety disorder or benzodiazepam use	Hypertension	Drug and alcohol disorders	Coronary heart disease	Asthma and/or chronic obstructive pulmonary disease	Diabetes	Back or spine disorders	Personality disorders	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	✓											8.88%	8.88%	0.13	$10,252	4.83%	4.83%	4.58%	2.09%	15.73%
2	✓	✓										7.13%	16.01%	0.24	$13,282	5.02%	9.85%	3.51%	3.55%	24.66%
3	✓	✓	✓									4.33%	20.34%	0.44	$15,834	3.64%	13.49%	2.87%	6.60%	33.36%
4												2.60%	22.94%	0.13	$5,360	0.74%	14.23%	2.37%	1.22%	4.08%
5	✓		✓									2.50%	25.44%	0.23	$13,877	1.84%	16.07%	1.98%	3.98%	25.83%
6	✓	✓			✓							2.03%	27.47%	0.98	$18,885	2.03%	18.10%	0.85%	8.70%	36.25%
7	✓			✓								1.80%	29.26%	0.21	$11,281	1.08%	19.18%	1.49%	2.26%	21.15%
8	✓	✓	✓		✓							1.77%	31.03%	1.46	$20,806	1.96%	21.14%	1.17%	13.92%	44.57%
9	✓	✓		✓								1.57%	32.61%	0.37	$14,351	1.20%	22.33%	1.51%	4.92%	31.28%
10	✓				✓							1.38%	33.99%	0.60	$15,257	1.12%	23.45%	0.59%	6.00%	26.37%
11	✓	✓	✓	✓								1.21%	35.19%	0.74	$17,935	1.15%	24.60%	1.30%	9.47%	41.93%
12		✓										0.91%	36.11%	0.21	$7,549	0.37%	24.97%	0.51%	2.33%	5.95%
13	✓	✓	✓						✓			0.87%	36.97%	0.42	$14,085	0.65%	25.61%	0.35%	4.97%	34.92%
14	✓	✓						✓				0.85%	37.82%	0.35	$15,441	0.70%	26.31%	0.86%	4.91%	37.17%
15	✓	✓		✓				✓				0.85%	38.67%	0.55	$18,327	0.82%	27.13%	1.12%	8.17%	45.21%
16	✓							✓				0.85%	39.52%	0.21	$13,678	0.61%	27.75%	1.04%	3.47%	23.60%

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 schizophrenia.
[2] $3 billion, excluding Long-Term Care costs, was spent by Medicaid on 160,223 disabled Medicaid-only beneficiaries with schizophrenia. Results are presented for the top 16 out of 1,510 total patterns observed for people with schizophrenia.
[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.

Table 3: Schizophrenia Clinical Opportunities

The following table inventories evidence-based models of care for schizophrenia 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
Schizophrenia + Antipsychotic or Mood Stabilizer Drugs			
Glick 2009. Inconclusive findings as to whether lamotrigine or valproate provide additional benefit to people with Schizophrenia.	McGurk 2009. Cognitive remediation in addition to vocational rehabilitation improved work outcomes.		Chafetz 2008. Wellness training for severely mentally ill adults improves quality of life.
	Hudson 2008. Patient tailoring strategies to improve adherence for schizophrenia.		
	McCrone 2009. REACT (assertive community treatment) may increase engagement, no change in costs.		
	Morken 2007. Integrated treatment did not improve adherence to anti-psychotics.		
	Frangou 2005. Telemonitoring of schizophrenics may increase adherence.		
Schizophrenia + Depressive Disorders			
Zisook 2007. Subsyndromal depressive symptoms common in middle aged and older schizophrenics			Vanelle 2006. Amisulpride and olanzapine were effective with tolerance.
Conley 2007. Depressive symptoms affect long-term functional outcomes.			
Davis 2008. STAR-D suggested that substance use and depression are associated with decreased functionality and increased suicide risk factors.			
Schizophrenia + Anxiety or Benzodiazepine Use			
	Chen 2009. Progressive muscle relaxation may reduce anxiety in people with schizophrenia.		

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
Schizophrenia + Hypertension			
Correll 2008. Second generation antipsychotics have equal effects on development of metabolic syndrome in schizophrenics and patients with bipolar disorder.		Cohn 2006. Review of consensus guidelines for metabolic monitoring of patients treated with antipsychotic medications.	Schneiderhan 2009. Describes a point of care metabolic risk assessment screening program in outpatients receiving antipsychotics. Screening included blood pressure, glucose, personal knowledge, and modifiable risk factors.
Millar 2008. Underscores importance of mental health providers to perform assessments aimed at physical assessment including blood pressure.	Von Muenster 2008. Describes pharmacist interventions during physician-pharmacist co-management of hypertension. Could be applied to patients with multimorbidity.		
Jacob 2008. Discusses medical comorbidity in schizophrenia, including hypertension. Provides framework for assessment, monitoring, and management.	Canzanello 2005. Describes physician-nurse team model to improve long-term hypertension control rates by active intervention and home blood pressure measurement. Positive results.		Guideline from Royal Australian and New Zealand College of Psychiatry recommends attention is paid to hypertension in setting of pharmacologic treatment of schizophrenia.
Nasrallah 2006. Baseline data from CATIE study highlights high rate of non-treatment (62.4%) of hypertension among schizophrenics.	Carter 2009. Meta-analysis of team-based care intervention for hypertension. Positive results.		
Schizophrenia + Drug or Alcohol			
Swartz 2008. Inconclusive findings on the best method to treat schizophrenia in people with and without illicit substance abuse.	Price 2007. Pilot of advanced practice nurse helping move from inpatient to community care.	Slade 2007. Best practices for the treatment of patients with mental and substance use illnesses in the emergency department.	Bellack 2006. Behavioral treatment for drug abuse in people with severe persistent mental illness is efficacious.
Clark 2007. Describes locations and patterns of psychiatric and substance abuse treatment for Medicaid beneficiaries with co-occurring mental and substance use disorders in five states.		Drake 2008. Systematic review of psychosocial research on psychosocial interventions for patients with co-occurring severe mental and substance use disorders.	Craig 2008. Integrated treatment for severe mental illness and substance abuse improved symptoms and level of met needs, at no additional cost. Did not change quality of life or substance use.
Kemp 2009. Prospective study of medical and substance use comorbidity in bipolar disorder found that rapid cycling with co-occurring substance use is harbinger of serious medical problems		Cleary 2008. Cochrane review of psychosocial interventions for people with both severe mental illness and substance misuse. No compelling evidence to support any one treatment over another.	Petrakis 2004. Naltrexone may be an effective treatment for alcohol abusing people with schizophrenia.

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
Schizophrenia + Drug or Alcohol *(continued)*			
Horsfall 2009. Describes limitations of current evidence base for treatment of patients with psychosis and co-occurring substance use disorders. Successful treatments (whether integrated or parallel models) require coordination, team approach, multidisciplinary, specialist-trained personnel, variety of program types and long-term follow-up.		Kleber 2007. Practice guideline for the treatment of patients with substance use disorders. American Psychiatric Association. Discusses treatment of substance use in context of depression and other psychiatric illness.	Haddock 2003. CBT for substance abuse and schizophrenia was better than usual care at comparable cost.
Minkoff 2001. Describes the results of a 1998 report "Co-occurring Disorders in Managed Care Systems: Standards of Care, Practice Guidelines, Workforce Competencies, and Training Curricula."		Ziedonis 2005. Consensus recommendations from Presidential Commission and SAMHSA on treatment of schizophrenia and addiction. Excellent source.	Barrow Clough 2001. Motivational interviewing, CBT, and family intervention improved outcomes for people with comorbid schizophrenia and substance abuse.
		Smelson 2008. Review of studies involving US FDA-approved medications for co-occurring substance abuse problems among individuals with schizophrenia and approaches to care of this population.	Graham 2004. Outlines experience of implementing an integrated treatment approach for clients with co-existing severe mental health and substance use problems.
		Green 2007. Review of pharmacological strategies for optimal treatment of substance use disorder and schizophrenia.	Burnam 2006. Review of clinical and systems approaches to care for patients with substance abuse with mental disorders.
		Donald 2005. Review of integrated versus non-integrated management and care of patients with co-occurring mental health and substance use disorders. Equivocal findings on superiority of integrated models.	Craig 2008. Randomized trial of case managers trained to manage substance abuse disorders among patients with severe mental illness. Produced significant improvements in symptoms and level of met needs, but not in substance use, at no additional cost.
		San 2007. Review of use of antipsychotics in treatment of patients with schizophrenia and comorbid substance abuse disorders. Studies suggest that second generation antipsychotics, particularly clozapine, may be effective for this group.	
		Cleary 2007. Cochrane review of psychosocial interventions for people with both severe mental illness and substance misuse. 25 randomized trials reviewed. No compelling evidence that any one psychosocial treatment over another reduces substance use by people with serious mental illness.	