Methods Appendix

Our study reports data on: (1) Medicaid-covered youth, age 6 to 17, (2) privately insured youth, age 6-17, and (3) long term nursing home residents (age 65+).

Data Sources and Study Population

Medicaid Beneficiaries

Data were obtained from the Medicaid Analytic Extract Files (MAX) for 2001-2004 for the following 7 states: New York, Texas, California, Florida, Illinois, Ohio, and Georgia. The MAX data consist of inpatient, long-term care, other services (e.g., ambulatory services) and prescription drug claims paid by Medicaid, as well as summary data detailing beneficiary characteristics, enrollment information, and utilization summaries. For the analyses presented in this paper, diagnoses were identified using inpatient and other services claims and information on filled prescriptions was extracted from the prescription drug files. All analyses were based on age-eligible fee-for-service clients who were enrolled for the entire calendar year and had no days in a long-term care facility. For each calendar year youth were defined as individuals aged 6-17.

Privately Insured

Data were obtained from the Thomson MarketScan® Commercial Claims and Encounters Database for 1996, 2001, 2004 and 2006. This database captures pharmacy and clinical services for privately insured individuals and their family members; over the entire 1996-2006 period, the database provided information on approximately 40 million different privately insured individuals (including dependents) who contributed at least one year of data, from more than 100 contributing employers and health plans. All analyses were based on age-eligible individuals who were enrolled in a medical plan for the entire calendar year and had pharmacy coverage. For each calendar year youth were defined as individuals aged 6-17.

Nursing Home Residents

Data were obtained from the Minimum Data Set (MDS) (v. 2.0) for 1999 and 2006, for individuals ≥65 years of age who had a long-term care nursing home stay in California, New York, Florida, Texas, Illinois, New Jersey, Georgia, or Ohio during calendar year 1999 or 2006 and ≥ 1 non-admission full MDS assessment. The MDS is a national standardized tool utilized for health status assessment, screening and care planning for NH residents, and is completed by nursing staff trained to apply CMS assessment guidelines. The assessment instrument includes among other data elements residents’ physical, cognitive and psychosocial functioning, active clinical diagnoses, health conditions, treatments and services, demographics, payer source, and advance directives. Long term care assessments reflect active diagnoses and observed behavioral symptoms as well as use of selected psychotropic medication classes for the 7 days prior
to the assessment. All Medicare and Medicaid-certified nursing facilities are required to complete MDS assessments on admission of each resident and at least annually for all long term residents (full assessment). In addition, full assessments are required when residents have a significant clinical or administrative change, and a briefer assessment is performed on a quarterly basis.

Our analyses are based on the last full assessment in a given calendar year. Admission assessments were excluded because they occur shortly after admission when care plans may not have been fully implemented, and include psychotropic treatments used during the 7 day reference period that may be prior to the nursing home admission. MDS data were supplemented with information on facility characteristics from the Online Survey Certification and Reporting (OSCAR) System. The OSCAR is a CMS administrative database that contains facility level information on all NHs certified to provide care under Medicare or Medicaid. OSCAR includes uniform data generated by state licensure and certification agencies including self-reported information gathered from all facilities and validated at site visits as part of the annual Medicare/Medicaid certification process. Facility information includes staffing, bed size, ownership, chain affiliation, provision of special care units and case-mix.

Antipsychotics are one of five drug classes with a dedicated item (checkbox) in the MDS assessing the frequency of use over the past 7 days. Because the MDS does not specify individual antipsychotic drugs or dosing information, we were unable to distinguish first from second generation antipsychotic medications.

### Antipsychotic Use

Antipsychotic use was determined separately for each age group, dataset, and calendar year. For the claims based datasets (Medicaid Analytic Extracts, Thomson MarketScan®), a pharmacy claim for one or more antipsychotic medication during the calendar year defined antipsychotic use. For the analyses among elderly nursing home residents, antipsychotic use was based on the recorded frequency of antipsychotic use during the last 7 days in the last MDS assessment of the calendar year.

### Hierarchical Diagnostic Groups

To understand the conditions for which antipsychotics were prescribed, we constructed a hierarchical classification of diagnoses for each age group. Each age-specific classification begins with conditions with FDA indications (such as schizophrenia, autism, and bipolar disorder) and progresses to other conditions with widespread use such as conduct disorder, and ADHD (in youth) or dementia with or without behavioral symptoms (in nursing home residents). The diagnostic grouping was based on all inpatient or outpatient claims with a first listed ICD-9-CM diagnosis code for the specific conditions during a calendar year. The age specific hierarchical groupings are shown below:
Youth (age 6-17)

Group 1--any schizophrenia dx
Group 2--any autism or MR dx but no schizophrenia
Group 3--bipolar disorder but not above
Group 4--conduct disorder and/or DBD, but not ADHD
Group 5--conduct disorder and/or DBD, plus ADHD
Group 6--ADHD but not above
Group 7--anxiety or depression but not above
Group 8--substance abuse but not above
Group 9--adjustment related disorders but not above
Group 10--other MH disorders but not above
Group 11--none of above

Nursing Home Residents (age 65+)

Group 1--Schizophrenia
Group 2--Bipolar disorder
Group 3--Dementia & aggressive behavioral symptoms
Group 4--Dementia & non-aggressive behavioral symptoms
Group 5--Dementia without behavioral symptoms
Group 6--Depression or anxiety disorder
Group 7--None

(March, 19, 2008)
Additional citations for selected endnotes are as follows:

Endnote 8:


Endnote 11:

For further information on coverage see J.A. Buck, K. Miller, and J. Bae, Mental Health and Substance Abuse Services in Medicaid, 1994, Pub. no.(SMA)00-3284 (Rockville, Md.: SAMHSA, 2000).

Endnote 23:


Endnote 29:


Endnote 27: