Year 5 Evaluation of Impact of Selected Psychotherapeutic Drug Profiles on Personal Outcomes in Florida's Developmental Disabilities Home and Community Based Services Waiver

July 1, 2003 – June 30, 2005

Florida DD HCBS Waiver

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Executive Summary

Prior research demonstrates that psychotherapeutic medication is widely administered among people with developmental disabilities. However, research examining the impact of psychotherapeutic medication on the well-being of developmentally disabled individuals is sparse. In this study, we examine the impact of medication on the well-being of people with developmental disabilities by analyzing the impact of several high-risk drug profiles on the personal outcome measures of individuals receiving services through the Medicaid Developmental Disabilities Home and Community Based Services Waiver.

Analyses are based on a random sample of 2,496 individuals receiving services through the DD HCBS waiver who completed a POM interview between July 1, 2003 and June 30, 2005, and who could be matched to pharmacy claims data between July 1, 2002 and June 30, 2003. Regression analyses examine the impact of eight high-risk drug profiles on the percent of outcomes met, the likelihood of meeting 13 or more outcomes, and the likelihood of meeting each individual personal outcome measure.

Results show no impact of the individual drug profiles on the percent of outcomes achieved or the likelihood of achieving 13 or more outcomes. However, six of the eight drug profiles do impact specific outcomes, although different profile types affect different outcomes. Several drug profiles decrease the likelihood that a specific outcome is achieved while a few increase the likelihood that other outcomes are achieved.

Taking Lithium decreases the likelihood of *Choosing where one works*. Taking Mellaril reduces the likelihood of *Deciding when to share personal information*. Taking Two or more Anti-Seizure drugs decreases the likelihood that one *Chooses personal goals* and *Is treated fairly*. Taking Two or more Anti-Psychotic drugs reduces the odds of *Choosing one's daily routine* and increases the odds that one *Has Privacy*. Taking Two or more Sedatives reduces the likelihood that one *Chooses where they work, Performs different social roles,* and *Has friends*. Taking Two or more SSRI drugs increases the odds that one *Chooses personal goals, Chooses daily routine, Decides when to share personal information,* and *Participates in the life of the community*.

Research-related recommendations conclude that future research should examine concrete health indicators for individuals taking psychotherapeutic medication, and whether individuals taking psychotherapeutic medication differ from individuals taking no medication in their use of waiver services. Policy-related recommendations suggest adding a special outreach program for individuals taking medication to Supported Employment services, performing a focus group session with individuals who fit a drug profile, and implementing special choice counseling for individuals taking medication with a sedating effect.

The impact of demographic characteristics on personal outcomes is also examined, and related recommendations are offered. Demographic characteristics also have interesting and important effects on individual outcome measures, although different demographic

characteristics affect different outcomes. Research-related recommendations include future research that examines why developmentally disabled women are less likely to choose where they work and have the best possible health than men, the root of the declining choice, goals, and rights associated with aging, which health issues depress achieving the best possible health as individuals age, and the availability of waiver services across different APD Areas. Policy-related recommendations include modifying abuse and neglect training to highlight women's higher risk of abuse and neglect, implementing guidelines for group homes to help them structure choice into their policies, and executing focus group sessions to examine why individuals with cerebral palsy have low levels of satisfaction with services.

Introduction and Background

This study is the fifth in a series of annual studies that analyze the use of psychotherapeutic medications and incidence of several high-risk drug profiles among Florida's population of persons with developmental disabilities who receive services from the Developmental Disabilities Home and Community Based Services (DD HCBS) Medicaid Waiver. The studies utilize pharmacy claims data from the Florida Medicaid Management Information System (FMMIS) and consumer demographic data from the Agency for Persons with Disabilities (APD), Allocation, Budget and Contract (ABC) Control System[1]. These studies are conducted as part of the Florida Statewide Quality Assurance Program (FSQAP), a multi-year review of services and outcomes for consumers receiving services under the waiver program. The Delmarva Foundation administers this project through a contract with the Florida Agency for Health Care Administration (AHCA).

The studies in Years 1 through 4 focus primarily on monitoring the incidence and duration of seven drug profiles among waiver recipients by age, gender, residential setting, disability, level of need, and district. The studies also examine the rate of medication review for recipients with drug profiles and the prescribing patterns of anti-psychotic drugs for individuals fitting the Two or More Anti-psychotic drug profile. The current study (the fifth year study) analyzes the impact of the eight drug profiles on the well-being of waiver recipients as measured by the 25 Personal Outcome Measures[2]. Analyses examine the effect of fitting a drug profile on the personal outcomes of individuals receiving DD HCBS Waiver services.

Prevalence of Psychotherapeutic Drug Use Among People with Developmental Disabilities

The first year drug study finds that 46 percent of the total DD HCBS Waiver population was on some type of anti-seizure or psychotropic medication in 2001. The second year drug study finds that over 51 percent of waiver recipients took an anti-seizure or psychotropic medication in 2002. The third year drug study finds that 21 percent of waiver recipients living in a paid residential care setting between April of 2003 and June of 2004 fit a drug profile.

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[1] The pharmacy claims include the date and quantity dispensed, the National Drug Code (NDC) for the medication prescribed, and the prescribing and dispensing providers. Demographic data about individuals served through the DS HCBS Waiver were available through the ABC database, including primary disability, APD area and residential setting. Consumers with medication reviews were identified using medical claims data in FMMIS. First DataBank® therapeutic classes were used to identify FMMIS pharmacy claims with the drug profiles studied (refer to Appendix A for a complete listing of the medications in each profile).

[2] Council on Quality and Leadership (CQL) representatives have trained Delmarva reviewers/consultants in the interview techniques specific to their 25 Personal Outcome Measures (POM). The purpose of the interviews is to help determine the degree to which the participants in the program have supports in place to improve their quality of life and to measure how well they are achieving outcomes in their lives that are important to them. Staff from CQL regularly monitor the reviewers and also provide reliability oversight.

Other research finds that the use of psychotropic medication among people with intellectual disabilities is widespread (Aman 1984; Linaker 1990; Robertson et al. 2000). Linaker (1990), Nottestad and Linaker (2003), and Robertson et al. (2000) find that the widespread administration of psychotropic medication to people with developmental disabilities does not result from the diagnoses of those given the medication. Rather, widespread use is largely the result of using psychotropic medication to control challenging behavior among individuals with intellectual disabilities (Bokszanska et al. 2003; Clarke et al. 1990; Linaker 1990; Robertson et al. 2000). Robertson et al. (2000) find that in addition to challenging behavior, having no mobility problems is an important predictor of receipt of antipsychotic medication among people with developmental disabilities. This suggests the use of antipsychotic medication to control behavior may increase when challenging behavior is accompanied by mobility since challenging behavior can be harder to manage when individuals are mobile.

Given the evidence for the prevalence of the use of psychotherapeutic medications among people with developmental disabilities, the next step is to investigate the impact of these drugs on waiver recipients. If these medications impact waiver recipients, do they benefit or harm them? How do they impact recipients? Do they impact recipients' health, ability to engage in social relations, ability to make choices for oneself, or satisfaction with life? The purpose of this study is to examine these questions.

Effects of Psychotherapeutic Drug Use Among People with Developmental Disabilities

Much of the research examining the impact of psychotropic medication on people with developmental disabilities focuses on the effectiveness of medication in managing behavior problems. The evidence for the effectiveness of psychotropic medication in managing behavior is mixed (Aman and Singh 1986; Brylewski and Duggan 1999; Verhoeven and Tuinier 1996). Brylewski and Duggan (1999) and Duggan and Brylewski (1999) argue there is no reliable evidence that antipsychotic medication is effective or ineffective in treating challenging behavior in people with intellectual disabilities.

A variety of studies examining the impact of specific medications on behavior provide evidence suggesting psychotropic medication can reduce challenging behavior. Verhoeven and Tuinier (1996) find in the appropriate daily dosage, buspirone can be effective in reducing challenging behavior characterized by aggressive outbursts, self-injurious behavior, impulsivity, and antisocial behavior. Thalayasinam et al (2004) report clozapine is a safe and effective treatment for treatment-resistant schizophrenia or bipolar disorder for many people with intellectual disabilities. Zarcone et al (2001) assess the effectiveness of risperidone in the treatment of aberrant behavior in developmentally disabled individuals and find it to be effective for 50 percent of the sample. Similarly, Aman et al. (2002) find risperidone is effective and well-tolerated for the treatment of severely disruptive behaviors in children with subaverage IQ's. Bokszanska et al. (2003) investigate the use of olanzapine and risperidone for treating behavior problems in those with developmental disabilities and find that both medications are well-tolerated and

effective in treating the target symptoms. Ruedrich et al. (1999) find valproate to be effective in reducing aggressive and self-injurious behavior in people with an intellectual disability, and allow the use of other psychotropic medications to be decreased or discontinued. Branford et al. (1998) find selective serotonin reuptake inhibitor (SSRI) medication prescribed for maladaptive behavior was successful in reducing challenging behavior in only 35 percent of individuals in their study. Hanzel et al. (2000) find evidence that barbiturate antiepileptic medication, such as Phenobarbital and primidone, can exacerbate challenging behavior in those with an intellectual disability leading to the use of antipsychotic medication at higher than necessary doses. They find reducing barbiturate epileptic medications allows antipsychotic medications to be reduced and is accompanied by a corresponding decrease in challenging behavior.

While research indicates psychotropic medication can be effective in reducing challenging behavior for some people with intellectual disabilities, it also indicates side-effects are commonly experienced with the medication (Aman et al. 2002; Branford et al. 1998; Nottestad and Linaker 2003; Thalayasingam et al. 2004; Zarcone et al. 2001). Nottestad and Linaker (2003) argue psychotropic medication has harmful side effects for people with intellectual disabilities, such as interference with motor function and learning, and sedation, although these effects vary with dosage and drug type. However, Aman and Singh (1986) argue the effect of drugs on learning is complex and does not always suppress learning. Dosage, drug type, and individual characteristics must be taken into account. For instance, Aman (1990) notes most psychotropic medication is more potent, toxic, and longer lasting among the elderly. Branford et al. (1998) find side-effects are common and a frequent reason for suspending treatment in the use of SSRI medication.

While research has examined the impact of various psychotropic medications on the behavior of individuals with intellectual disabilities, research has not examined the impact of psychotropic medication on the overall well-being of people with developmental disabilities.

Profile Background

In 1998 a group of international experts developed guidelines for anti-seizure and psychotropic medication usage in persons with developmental disabilities and mental health/behavioral problems. This publication, entitled The International Consensus Handbook: Psychotropic Medications and Developmental Disabilities, identifies the following multiple medication profiles that could put individuals with developmental disabilities at increased risk for complications and/or decreased quality of life:

- **Two or more sedative/hypnotic medications concurrently**. Sedatives refer to any medication that acts on the central nervous system to reduce responses to stimuli (Segen 2006). Adverse effects may include:

1) Ataxia, a condition characterized by a loss of ability to coordinate muscular movement that can result in unsteady movements and a staggering gait;
2) Loss of inhibitions;
3) Cardiac and respiratory depression;
4) Psychological and physical dependence.

- **Two or more anti-psychotic medications concurrently**. Anti-psychotic medications include any drug that attenuates psychotic episodes (Segen 2006). Adverse effects can include:

  1) Dystonia, a condition characterized by abnormal muscle tone;
  2) Akathisia, a condition characterized by motor restlessness, muscular quivering, and an inability to sit still;
  3) Parkinsonism, a disease characterized by tremors, muscle rigidity, slow speech, and a shuffling gait;
  4) Tardive dyskinesia, a disorder characterized by involuntary twitching of the face, tongue, and limbs;
  5) Sedation, the slowing of mental and physiological functions;
  6) Autonomic side effects including blurred vision, dry mouth, nasal congestion, and constipation.

- **Two or more selective serotonin reuptake inhibitors (SSRI)**. SSRI medication refers to a class of antidepressants that slow the reabsorption of serotonin by neurons, allowing it to stay in the synapse longer (Segen 2006). Side effects may include:

  1) Insomnia, a condition characterized by chronic difficulty in falling or staying asleep for a sufficient length of time;
  2) Agitation;
  3) Headache;
  4) Nausea;
  5) Diarrhea.

- **Phenobarbital while taking another anti-seizure medication**. Anti-seizure medication inhibits neuromuscular transmission. This combination presents high potential for side effects and may decrease phenobarbital metabolism and the effectiveness of the other medications. Adverse effects can include:

  1) Ataxia, a condition characterized by a loss of ability to coordinate muscular movement that can result in unsteady movements and a staggering gait;
  2) Slurred speech;
  3) Mental confusion;
  4) Blurred vision;
  5) Nausea;

6) Hematologic disorders;
7) Hepatitis, a condition characterized by inflammation of the liver.

Several profiles were added to these four. Clozaril was added as a new profile after the first year. Lithium and Mellaril were included in the first study even though they were not part of the Consensus recommendations. This study is the first of the drug profile studies to look at central nervous system stimulants.

- **Clozaril** (generic name clozapine). Clozaril is an atypical anti-psychotic and sedative used for the treatment of treatment-resistant schizophrenia (Segen, 2006). This drug should be the last choice for treatment of this condition because it can:

  1) lower the seizure threshold;
  2) cause Neuroleptic Malignant Syndrome (fever, respiratory distress, tachycardia, convulsions, diaphoresis, hypertension, hypotension, pallor, tiredness; and
  3) cause agranulocytosis, a potentially lethal disorder of the white blood cells.

  Because of the risk of agranulocytosis, anyone who takes Clozaril is required to have a complete blood count (CBC) once a week for the first six months at the initiation, biweekly thereafter and weekly for the four weeks following discontinuation.

- **Lithium**. Lithium is most often used for the treatment of manic/depressive (bipolar) and depressive disorders. Lithium levels should be monitored every three months and a periodic EKG obtained for consumers over age 40 or with cardiac involvement. Potential side effects include (Segen, 2006):

  1) Hyperirritability;
  2) Extremely high fever;
  3) Stupor;
  4) Coma;
  5) Inflammation of the stomach and intestines;
  6) Cardiovascular disease;
  7) Osteoporosis.

- **Mellaril** (greater than 25 mg*)*. Mellaril (generic name thioridazine) is a typical anti-psychotic. According to a warning posted on the U.S. Food and Drug Administration (FDA) website, it should be reserved for use in the treatment of schizophrenic patients who fail to show an acceptable response to adequate courses of treatment with other anti-psychotic drugs because it:

1) prolongs the QTc[3] interval, in a dose related manner, and has been associated with life-threatening arrythmias and sudden death;
2) is contraindicated with fluvoxamine (Luvox), propanolol (Inderal) and fluoxetine (Prozac); and
3) can cause Neuroleptic Malignant Syndrome (see *Clozaril* above).

Consumers with this profile should have an annual EKG and monitoring of serum potassium and magnesium.

- **Two or more central nervous system stimulants (CNSS)**. CNSS medications refer to any drugs that increase the activity of the nervous system. These drugs typically result in euphoria and increased alertness (Kemienski and Keogh, 2006). Side effects can include:

1) Sleeplessness;
2) Restlessness;
3) Tremors;
4) Irritability;
5) Cardiovascular problems such as increased heart rate, palpitations, disrhythmia, and hypertension.

An individual who takes two or more sedatives, two or more anti-psychotics, two or more SSRIs, Phenobarbital and another anti-seizure medication, clozaril, lithium, mellaril, or two or more CNSSs, is defined as fitting a profile.

Well-Being and the Personal Outcome Measures (POM)

Well-being refers to a person's access to needed goods and services and the person's satisfaction with the overall conditions of life. Satisfaction may be influenced not only by access to goods and services, but by one's health, social environment, family life, and access to meaningful work. The Personal Outcome Measures (POM), developed by the Council on Quality and Leadership, include 25 items that allow us to assess a variety of outcomes that indicate the presence of these quality of life criteria in an individual's life. Thus the POM items are well-suited as a measure of well-being. The POM measures indicate whether or not individuals have achieved the following outcomes: *Chooses personal goals, Chooses where and with whom they live, Chooses where they work, Has intimate relationships, Satisfied with services, Satisfied with personal life situations, Chooses daily routine, Has Privacy, Decides when to share personal info, Uses their environment, Lives in integrated environments, Participates in the life of community, Interacts with members of the community, Performs different social roles, Has friends, Is respected, Chooses services, Realizes personal goals, Is connected to natural support networks, Is safe, Exercises rights, Is treated fairly, Has the best possible health, Is free from abuse and neglect,* and *Experiences continuity and security*.

[3] The QTc is a measure of the time between the beginning of the Q wave and the end of the T wave in the heart's electrical cycle, correcting for heart rate.

Theoretical Model

Figure one presents a theoretical model depicting the relationship between psychotherapeutic medication, APD services, demographic characteristics, and Personal Outcome Measures. We see in this figure that psychotherapeutic medication, APD services, and demographic characteristics may impact POMs through their effect on individual abilities and preferences. Psychotherapeutic medication has the potential to either facilitate or inhibit individual abilities or preferences. Psychotherapeutic medication may improve health or alleviate physical or behavioral limitations. To the extent psychotherapeutic medication has these beneficial effects, we would expect it to improve individuals' chances of achieving POMs and therefore to improve their overall well-being. However, psychotherapeutic medication also has the potential to create unanticipated side-effects that can result in health problems, physical limitations, and behavioral challenges. In this case, we would expect psychotherapeutic medication to reduce individuals' chances of achieving POMs and to reduce their overall well-being. It is possible that psychotherapeutic medication creates both benefits and problems for individuals making it more difficult to discern the balance of the impact on individuals and their POMs.

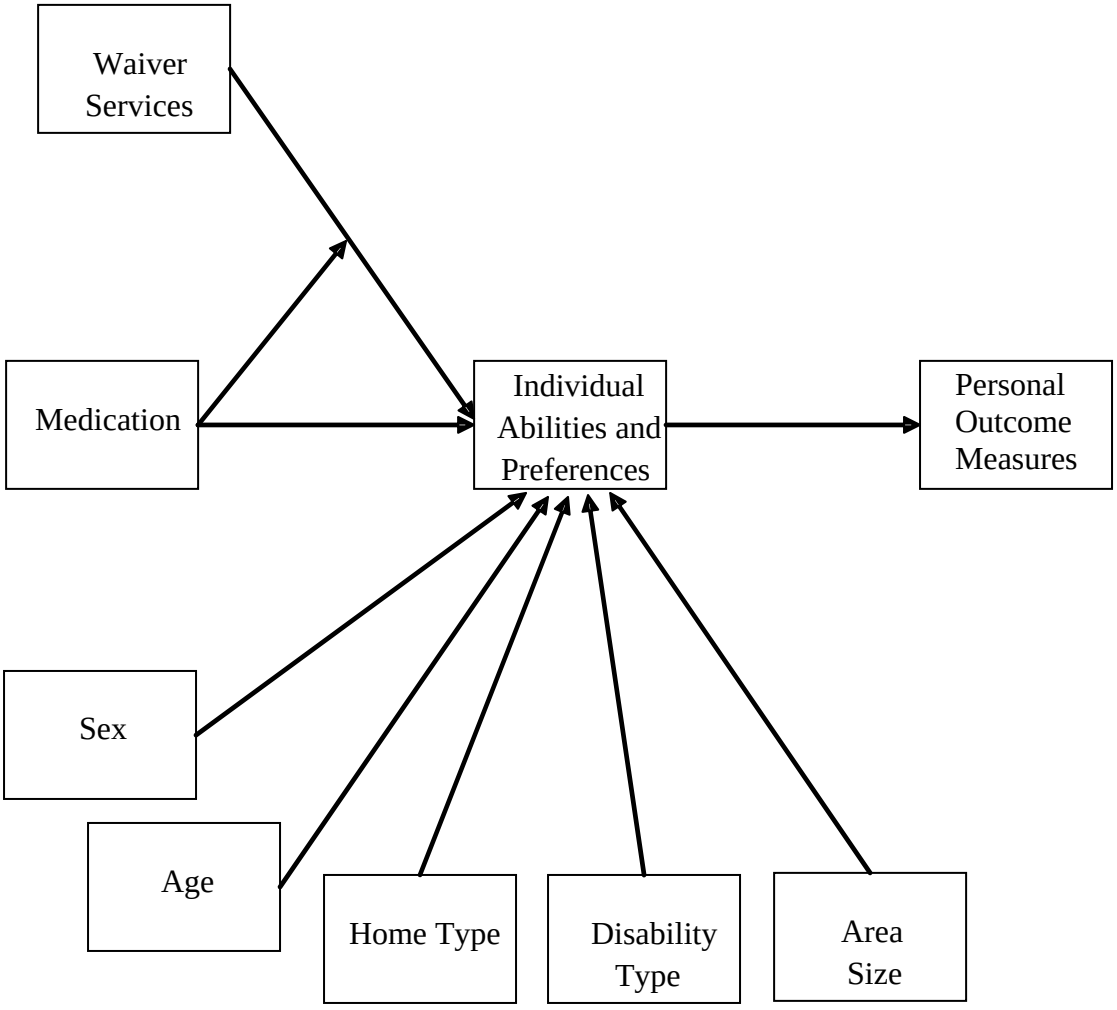
APD waiver services are designed to facilitate individual abilities and preferences and provide supports that enhance the chances of achieving POMs. Psychotherapeutic medication has the potential to impact outcomes by interfering with an individual's ability to utilize APD services. For example, medication that results in unsteady physical movements and a staggering gait has the potential to interfere with services for adult day training or supported employment. Similarly, medication side-effects such as headache, nausea, or sedation may make it more difficult for individuals to participate in services such as nonresidential support.

Demographic characteristics also have the potential to impact POMs through their effect on individual abilities and preferences. To the extent that women and men have differing preferences, abilities, or are treated differently by others, sex may affect the chance of achieving POMs. Age may impact POMs if individuals' abilities or access to institutional or natural supports change as they age. To the extent different home types offer differing supports and structures, they have the potential to differ in whether they facilitate or inhibit individual abilities and preferences, and thereby differ in their impact on POMs. For instance, group homes that establish fairly inflexible structures and schedules are more likely than other home types to restrict individual choice and inhibit achieving the goal of choosing personal goals. Similarly, disability types that entail physical limitations may be more likely to present obstacles to certain preferences and inhibit achieving the goal of using one's environment. APD Area size also has the potential to impact POMs via its effect on individual abilities or preferences. Areas that offer a wider range of services or providers may facilitate POMs involving choice as compared to areas that offer restricted services or providers. In addition, the physical environment of different-sized areas may present differing options or obstacles to pursuing goals. For instance, individuals in large areas may have better access to transportation than those in smaller areas. However, large areas may also be more likely

than smaller areas to be characterized by physical environments that present more of a challenge to safety.

While we hypothesize that medication, waiver services, and demographic characteristics impact personal outcomes through their effect on individual abilities and preferences, we do not measure individual abilities and preferences in our analyses. Rather, we test the effect of medication and demographic characteristics on personal outcomes, and interpret the effects relative to the theoretical model.

Figure 1: Theoretical Model



Data and Methods

Sample

Data for this study are taken from the random sample of 2,496 individuals receiving services through the DD HCBS waiver who completed a POM interview between July 1, 2003 and June 30, 2005, and who could be matched to pharmacy claims data between July 1, 2002 and June 30, 2003.[4] Pharmacy claims data are selected for the year prior to the POM interviews to assess the impact of selected drug profiles on personal outcomes. To assess whether drug profiles affect personal outcomes, we need to ensure that personal outcomes are measured after individuals have been exposed to the drugs consistent with the drug profiles. Descriptive analyses show trends across the different demographic indicators, as described below.

Methods

Regression analyses are used to test the net impact of drug profiles and independent variables on the outcomes achieved by individuals. We use two summary measures of outcomes achieved: percent of the 25 POM outcomes met, and an indicator of whether an individual has or has not met 13 or more outcomes. Regression analyses using the percent of outcomes achieved as the dependent variable use ordinary least squares techniques. The impact of an independent variable on the percent of outcomes met will indicate that the variable increases (or decreases) the percent of outcomes met. Because the indicator of whether an individual has met 13 or more outcomes is a categorical variable (Met vs. Not Met), regression analyses rely on logistic regression techniques. A significant impact of an independent variable on the indicator of whether an individual has met 13 or more outcomes tells us that the variable increases (or decreases) the likelihood that an individual achieves more than half of the outcomes. It does not tell us anything about the impact of the variable on achieving a small number of outcomes. Thus, regression analyses using the percent of outcomes met as the dependent variable tell us whether independent variables impact outcomes at any level. Regression analyses using the categorical indicator of whether a person has met 13 or more outcomes tell us whether independent variables impact outcomes at a very specific level, more than half. It is possible that some variables are helpful in increasing outcomes at any level, say from one to two outcomes or from 18 to 19 outcomes, whereas other variables may be particularly important in helping people achieve high levels of outcomes.

We also assess the impact of drug profiles and independent variables on each of the twenty-five POM outcomes. Each of twenty-five logistic regression models analyzes the impact of drug profiles and independent variables on an indicator of whether the outcome was met for that POM item. An impact of an independent variable on the outcome will indicate that the variable increases (or decreases) the odds that a person achieves that particular outcome.

To assess the impact of drug profiles on outcomes, a general measure indicating whether an individual fits one or more drug profile, and a separate set of measures indicating which of the drug profiles an individual fits are included in the models. These models

[4] Individuals selected for the longitudinal study are excluded from the analyses.

allow us to determine whether fitting a drug profile affects a person's ability to achieve outcomes, and if so, whether different drug profiles have differing effects on individuals' ability to achieve outcomes.

R-Square reflects the percent of variance in the dependent variable that is explained by the variables in the equation. This value will increase as additional variables are added to the equation, explaining more of the variation in the percent of outcomes met. The probability associated with the t-score informs us how likely it is the association between the independent and dependent variable is due to chance. A standard probability level used to determine "statistical significance" is p=.05. This means there is only a five percent probability the results from the sample are due to sampling fluctuation or chance.

Dependent Variables

There are twenty-seven dependent variables. Twenty-six are for the logistic regression analyses. One of these is a dichotomy indicating whether or not people met 13 or more of the 25 POM outcomes. Twenty-five are dichotomies indicating whether or not individuals met the outcome for one of the 25 POM items. Of the 2,496 individuals interviewed between July1, 2003, and June 30, 2005, 38 percent met 13 or more outcomes on the POM items.

13 or More Outcomes Met

July 1, 2003 - June 30, 2005

Number of Interviews	13+ Met	Percent 13+ Met
2,496	956	38.30

The following table shows the percent met for each POM item. Individuals were most likely to meet the outcome indicating they are *free from abuse and neglect*, with 82 percent of people meeting the outcome. They were generally *satisfied with their personal life situations*, with 71 percent achieving that outcome. Individuals were least likely to achieve the outcomes *perform different social roles*, *chooses services*, and *chooses where they work*. The dependent variable for the ordinary least squares regression analysis is the percent of the 25 POM outcomes scored as met for individuals interviewed from July 1, 2003 to June 30, 2005. The average percent of outcomes met for the 2,496 individuals in the sample was 43 percent.

Percent Outcomes Met: POM Items

July 1, 2003 - June 30, 2005

POM Item	Number Met	Percent Met
Chooses personal goals	982	39.34
Chooses where and with whom they live	878	35.18
Chooses where they work	585	23.44
Has intimate relationships	1,103	44.19
Satisfied with services	1,229	49.24
Satisfied with personal life situations	1,780	71.31

Chooses daily routine	1,127	45.15
Has Privacy	1,552	62.18
Decides when to share personal info	1,141	45.71
Uses their environment	806	32.29
Lives in integrated environments	657	26.32
Participates in the life of community	894	35.82
Interacts with members of the community	1,012	40.54
Performs different social roles	436	17.47
Has friends	654	26.20
Is respected	1,161	46.51
Chooses services	560	22.44
Realizes personal goals	1,214	48.64
Is connected to natural support networks	1,553	62.22
Is safe	1,623	65.02
Exercises rights	813	32.57
Is treated fairly	1,394	55.85
Has the best possible health	998	39.98
Is free from abuse and neglect	2,054	82.29
Experiences continuity and security	918	36.78
Average Percent Outcomes Met		43.46

Independent Variables

Multiple situations and factors influence the extent to which individuals are able to achieve outcomes and goals that are important to them. We are limited to the factors available in the Delmarva data, collected during the interview process: sex, Area size, age, type of disability, and supports present in their lives are available for analysis. The size of the Area in which they live is based upon information from Medicaid claims. Because larger urban areas may offer a broader array of services and also more community programs and employment opportunities, it is possible consumers living in these areas are more likely to have their needs met than people in more rural settings.

Evidence from previous work has consistently indicated that children under age 18 are more likely than adults to have a high percent of outcomes met. Because they are often in school environments, they are more likely to have supports present that lead to better outcomes. In addition, people living in family homes have access to natural support systems often unavailable to people in group homes and are therefore more likely to achieve their outcomes and goals.[5] No work has been completed that examines the impact of high-risk drug profiles on the ability to achieve personal outcomes for people with different disabilities. While prescription drugs may assist individuals with disabilities in going about their day-to-day lives, the potential is also present for prescription drugs to interfere with individuals' ability to achieve personal goals or depress health.

In this study we are able to determine the impact each of these independent variables has on outcomes met. We then "control" for these factors (independent variables) when

[5] See Quarterly and Annual reports submitted to AHCA for Year Two and Year Four.

determining the net effect of drug profiles on outcomes met. The independent variables used in the analysis are measured as follows:

- Sex: Male and Female
- Age: We show descriptive results for various age groups and analyze age as a continuous variable (without breaking it down by age groups) in the regression models.
- Area Size: The Medicaid Claims data from AHCA were used to identify the number of consumers living in each area during the study period. Areas with over 2,000 consumers on the DD HCBS waiver were categorized as Large. These include the Broward, Orlando, Miami-Dade and Suncoast areas. Medium size areas had from 1,000 to 1,999 consumers (e.g., Jacksonville, Pensacola, Tallahassee) and Small areas fewer than 1,000 consumers. The categories contain the following areas:
    - Large—7, 10, 11, 23
    - Medium—1, 2, 3, 4, 9, and 13
    - Small—8, 12, 14 and 15
- Home Type: There are several types of living arrangements available to people who receive services on the DD HCBS waiver. We have grouped these into three categories for this analysis. These are:
    - Family—family home and foster care
    - Independent—Independent Living and Supported Living
    - Group Homes—Large and Small Group Homes, Assisted Living Facilities (ALF), and Residential Treatment Facilities
- Disability: Consumers with six different disabilities are included in the sample. These are grouped as follows:
    - Mental Retardation
    - Cerebral Palsy
    - Autism
    - Other/Unknown—includes Epilepsy (3), Spina Bifida (37), Prader Willi (1), and Other (24)
- Drug Profiles: Pharmacy claims from July 2002 to June 2003 were used to identify individuals who fit one of the following high-risk drug profiles:
    - Clozaril (generic name clozapine)
    - Lithium
    - Mellaril (greater than 25 mg*)*
    - Phenobarbital while taking another anti-seizure medication
    - Two or more anti-psychotic medications concurrently
    - Two or more sedative/hypnotic medications concurrently
    - Two or more selective serotonin reuptake inhibitors (SSRI)
    - Two or more central nervous system stimulants (CNSS)

Distribution by Demographic Characteristic

The table below shows the distribution of the number and percent of POM interviews by each demographic characteristic. The ratio of male to female consumers shows a higher proportion of men than women. A little over 55 percent of the sample is male and just

under 45 percent is female.[6] Children aged 17 years or younger are a sizable portion of the sample at 13 percent. This is noteworthy because, as discussed above, previous research has shown that children are likely to have more POM outcomes met than are adults. The majority of individuals in the sample fall between 26 and 54 years of age. The majority of individuals in the sample, as well as in the population as a whole, live in family homes. Just under half of individuals live in a family or foster home, a little over a third of individuals interviewed lived in a group home, and just under 18 percent of individuals live independently or in supported living arrangements. The largest percent of consumers in the sample have Mental Retardation as their primary disability. The next largest category is Cerebral Palsy, although the total number of people with cerebral palsy, autism, or one of the "other" disabilities as their primary disability is quite small compared to mental retardation. Proportionately more individuals in the sample lived in Areas defined as Large, Areas with over 2,000 consumers as residents, than in either Medium or Small Areas. Just over 46 percent of individuals live in Large-size Areas, almost 39 percent live in Medium size Areas, and just under 15 percent live in Small size Areas.

POM Interviews by Demographic Characteristic
July 1, 2003 - June 30, 2005

Demographic Characteristic	Number	Percent
Sex		
Female	1,118	44.79
Male	1,378	55.21
Age Group		
17 and under	334	13.38
18 to 21	168	6.73
22 to 25	215	8.61
26 to 44	1,115	44.67
45 to 54	407	16.31
55 to 64	196	7.85
65 and over	61	2.44
Home Type		
Family/Foster	1,196	47.92
Independent/Supported	447	17.91
Group Home	853	34.17
Disability		
Mental Retardation	2,174	87.10
Cerebral Palsy	196	7.85
Autism	72	2.88
Other	54	2.16
Area Size		
Large	1,166	46.71
Medium	965	38.66
Small	365	14.62

[6] See FSQAP Year Four Annual Report, submitted to AHCA September 15, 2005, for population characteristics by gender, age, disability and home type.

Distribution by Number of Drug Profiles

The following table shows the number and percent of individuals by the number of drug profiles they fit. The majority of individuals do not fit a drug profile. Just under 90 percent of individuals do not fit a drug profile. Of those who fit a drug profile, the majority fit just one profile. A small number of individuals fit 2 or 3 profiles.

Individuals with a Drug Profile
July 1, 2002 - June 30, 2003

Number of Drug Profiles	Number of Individuals	Percent of Individuals
0	2232	89.42
1	244	9.78
2	16	0.64
3	4	0.16
Total	2,496	100.00

Distribution by Type of Drug Profile

The following table shows the number and percent of individuals by the type of drug profile they fit. The profile with the largest percent of individuals is the *Two or More Anti-Seizure* profile. Just under three and a half percent of individuals fit this profile. The *Two or More Anti-Psychotic* profile is a close second with just over three percent of individuals fitting this profile. The profiles with the smallest number of individuals are the *Two or More SSRI* and *Two or More CNSS* profiles. We also see that about ten and a half percent of individuals in the sample fit one or more profile.

Individuals Fitting a Drug Profile by Type of Drug Profile
July1, 2002 - June 30, 2003

Type of Drug Profile	Number Fitting Drug Profile	Percent Fitting Drug Profile
Clozaril	7	0.28
Lithium	39	1.56
Mellaril > 25 MG	41	1.64
Two or more Anti-Seizure	87	3.49
Two or more Anti-Psychotic	76	3.04
Two or more Sedatives	32	1.28
Two or more SSRI	4	0.16
Two or more CNSS	2	0.08
Total with One or More Drug Profile	264	10.58
Total Number of Interviews	2,496	100.00

Type of Drug Profile by Demographic Characteristic

The following table shows the number and percent of individuals who fit each drug profile by each demographic characteristic. A higher percent of women than men fit the *Two or More Anti-Seizure* profile and a slightly higher percent of men than women fit the

Two or More Anti-Psychotic profile. The percent of women and men who fit the other profiles does not differ greatly. Individuals aged 21 and under and 55 to 64 are more likely than individuals of other ages to fit the *Two or More Anti-Seizure* profile. Individuals aged 22 to 54 are more likely than individuals of other ages to fit the *Two or More Anti-Psychotic* profile. A higher percent of individuals aged 55 to 64 fit the *Two or More Anti-Seizure* profile than any other age group. A higher percent of individuals aged 22 to 25 fit the Lithium profile, Two *or More Anti-Psychotic* profile, and the *Two of More Sedatives* profile than any other age group. Individuals aged 45 to 64 are more likely than other age groups to fit the *Mellaril* profile. A higher percent of individuals residing in group homes as compared to other home types fit each profile, with the exception of the *Two or More Anti-Seizure* and *Two or more CNSS* profiles. A higher percent of individuals living in a family or foster home fit the *Two or More Anti-Seizure* profile than any other profile. A large percent of individuals living in a group home or an independent or supported living environment fit the *Two or More Anti-Psychotic* profile. A higher percent of mentally retarded individuals and individuals with cerebral palsy fit the *Two or More Anti-Seizure* profile than any other profile. Individuals with Autism are more likely to fit the *Two or More Anti-Psychotic* profile than other profile. The largest percent of individuals living in Large and Medium Areas fit the *Two or More Anti-Seizure* and *Two or More Anti-Psychotic* profiles. In contrast, the largest percent of individuals living in Small Areas fit the *Two or More Anti-Seizure* and *Mellaril* profiles.

Percent and Number Fitting a Drug Profile by
Demographic Characteristics and Type of Drug Profile
July 1, 2003 - June 30, 2005

Demographic Characteristic		Clozaril	Lithium	Mellaril	2+ Anti-Seizure	2+ Anti-Psychotic	2+ Sedative	2+ SSRI	2+ CNSS	Total Fitting One or More Drug Profile	Total Number of Interviews
Sex											
Female	%	0.27	1.16	1.79	4.47	2.77	1.25	0.18	0	10.91	
	N	3	13	20	50	31	14	2	0	122	1,118
Male	%	0.29	1.89	1.52	2.69	3.27	1.31	0.15	0.15	10.30	
	N	4	26	21	37	45	18	2	2	142	1,378
Age Group											
17 and under	%	0.00	0.90	0.30	3.59	1.50	0.30	0.00	0.60	7.19	
	N	0	3	1	12	5	1	0	2	24	334
18 to 21	%	0.60	1.79	0.00	3.57	1.79	0.00	0.00	0.00	7.14	
	N	1	3	0	6	3	0	0	0	12	168
22 to 25	%	0.00	4.65	1.40	3.26	4.65	3.26	0.00	0.00	13.95	
	N	0	10	3	7	10	7	0	0	30	215
26 to 44	%	0.36	1.08	1.70	2.96	3.50	1.43	0.18	0.00	10.40	
	N	4	12	19	33	39	16	2	0	116	1115
45 to 54	%	0.49	2.70	2.46	4.18	4.42	1.23	0.25	0.00	14.50	

	N	2	11	10	17	18	5	1	0	59	407
55 to 64	%	0.00	0.00	3.57	5.61	0.51	1.02	0.51	0.00	10.20	
	N	0	0	7	11	1	2	1	0	20	196
65 and over	%	0.00	0.00	1.64	1.64	0.00	1.64	0.00	0.00	4.92	
	N	0	0	1	1	0	1	0	0	3	61
Home Type											
Family/Foster	%	0.00	0.84	0.84	4.18	1.51	1.25	0.00	0.17	8.28	
	N	0	10	10	50	18	15	0	2	99	1,196
Independent/Supported	%	0.22	1.79	1.79	2.24	2.91	0.89	0.22	0.00	9.84	
	N	1	8	8	10	13	4	1	0	44	447
Group Home	%	0.70	2.46	2.70	3.17	5.28	1.52	0.35	0.00	14.19	
	N	6	21	23	27	45	13	3	0	121	853
Disability											
Mental Retardation	%	0.32	1.56	1.75	3.54	3.08	1.38	0.18	0.05	10.86	
	N	7	34	38	77	67	30	4	1	236	2,174
Cerebral Palsy	%	0.00	0.51	1.02	4.59	0.51	1.02	0.00	0.51	8.16	
	N	0	1	2	9	1	2	0	1	16	196
Autism	%	0.00	5.56	0.00	0.00	9.72	0.00	0.00	0.00	12.50	
	N	0	4	0	0	7	0	0	0	9	72
Other	%	0.00	0.00	1.85	1.85	1.85	0.00	0.00	0.00	5.56	
	N	0	0	1	1	1	0	0	0	3	54
Area Size											
Large	%	0.09	1.89	1.63	3.77	3.60	1.89	0.17	0.09	11.75	
	N	1	22	19	44	42	22	2	1	137	1,166
Medium	%	0.62	1.55	1.45	3.32	3.11	0.83	0.10	0.10	10.36	
	N	6	15	14	32	30	8	1	1	100	965
Small	%	0.00	0.55	2.19	3.01	1.10	0.55	0.27	0.00	7.40	
	N	0	2	8	11	4	2	1	0	27	365

Results

Descriptive Analyses

A summary of the percent of outcome met by demographic characteristics is presented in the following table. The table shows that women and men have a similar percent of outcomes met. Individuals aged 17 or younger have a higher percent of outcomes met than other age groups. Individuals living in Large, Medium, and Small size APD Areas have similar levels of outcomes met with those living in Medium size Areas having a slightly higher percent of outcomes met than those in other Areas. Individuals living in a Family/Foster home or Independent/Supported Living arrangement have a higher percent of outcomes met than individuals living in a Group Home. Individuals who are Mentally Retarded have a lower percent of outcomes met than individuals with other disabilities. Individuals who fit one or more drug profile have a somewhat lower percent of outcomes met than those with no drug profile.

Percent Outcomes Met by Demographic Characteristics
July1, 2003 – June30, 2005

	Percent Outcomes Met
Sex	
Female	44.31
Male	42.79
Age Group	
17 and under	55.70
18 to 21	40.93
22 to 25	46.16
26 to 44	42.22
45 to 54	41.72
55 to 64	37.71
65 and over	37.57
Area Size	
Large	42.62
Medium	45.82
Small	39.97
Home Type	
Family/Foster	48.52
Independent/Supported	52.38
Group Home	31.71
Disability	
Mental Retardation	42.01
Cerebral Palsy	50.82
Autism	56.28
Other	58.52
Drug Profile	
No Drug Profile	43.95
Fits One or More Drug Profile	39.41

Regression Analysis Results using Summary Outcome Measures

Results from the regression model using the 'Percent of Outcomes Met' as the dependent variable and an indicator of whether individuals fit one or more drug profile as an independent variable are presented in the following table. The R-Square value indicates that 17 percent of the variation in the percent of outcomes met for the individuals in the sample is explained by the ten variables in the equation. These ten variables represent the individual's sex, age, living arrangement, size of APD Area, primary disability, and drug profile status (whether or not the individual fits one or more drug profile).

The coefficient indicates the strength and direction of the relationship between the independent and dependent variable. A positive coefficient indicates that increasing values of the independent variable result in increasing values of the dependent variable. A negative coefficient indicates that increasing values of the independent variable result

in decreasing values of the dependent variable. A larger magnitude indicates a stronger impact of the independent variable on the dependent variable. In fact, the coefficient tells us the size of the change in the dependent variable for a unit change in the independent variable. For example, the coefficient for age tells us that when age increases by one year, the percent of outcomes met decreases by .001. Similarly, the coefficient for Independent/Supported Living tells us that living in an independent/supported living setting increases the percent of outcomes met by .055 as compared to living in a family home.

The t-value and p-value listed for each variable reflect the statistical significance of the relationship between each variable and the percent of outcomes met. A p-value of .05 or smaller (t-value of two or greater) is generally considered to be a significant relationship—one that is not due to chance or sampling error. The larger the t-value the less likely the relationship is due to chance. In other words, there is a real impact of the independent variable on the dependent variable.

Sex, Area size, residential setting, disability, and drug profile status are examined in the form of discrete variables. This means they are grouped into several categories, and the results are interpreted in terms of the reference group. For example, the results for consumers living in independent/supported living settings or group homes are relative to the reference group, people living in family homes. The reference group for sex is male, the reference group for area size is Small-Size Areas, the reference group for disabilities is Mental Retardation, and the reference group for drug profile status is Fits No Drug Profile.

Regression Results: Percent Outcomes Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	T-Value	P-Value
Female	0.009	1.020	0.306
Age	-0.001	-3.960	0.000
Independent/Supported Living	0.055	4.580	0.000
Group Home	-0.144	-14.520	0.000
Cerebral Palsy	0.035	2.220	0.026
Autism	0.111	4.380	0.000
Other Disability	0.101	3.510	0.001
Medium-Size Area	0.037	2.880	0.004
Large-Size Area	0.015	1.190	0.234
Fits One or More Drug Profile	-0.023	-1.710	0.088
Number	2,496		
R-Square	0.170		

All of the variables in the base model analysis show a significant impact on the percent of outcomes met with the exception of sex, large area size, and drug profile status. The results indicate that:

- Older people on the DD HCBS program are less likely to have outcomes met, regardless of where they live, their sex, the size of their Area, their primary disability, or whether they fit a drug profile.
- People living in independent or supported living environments have a higher percent of outcomes met than people living in family homes, net of other factors.
- Individuals in group home settings are less likely to have outcomes met compared to those in family homes, net of other factors in the analysis. The coefficient for group home settings has the largest magnitude (-.144) of any in the model.
- Individuals with mental retardation listed as their primary disability are less likely to have outcomes met than people with Cerebral Palsy, Autism, or the disabilities represented by the other disability category, net of the other factors in the equation. Regardless of living arrangements, people with mental retardation do not have as many outcomes met as people with any other disability.
- Individuals who fit one or more drug profile do not differ significantly from those who do not fit a drug profile in the percent of outcomes met net of other factors.

Results from the regression model using '13 or More Outcomes Met' as the dependent variable and an indicator of whether individuals fit one or more drug profile as an independent variable are presented in the following table. Logistic regression coefficients tell us the increase in the log odds of the dependent variable for a one-unit increase in the independent variable. For example, the log odds of achieving 13 or more outcomes decreases by .01 for each additional year of age, net of other effects. Thus the coefficient indicates the strength and direction of the relationship between the independent variable and the log odds of the dependent variable. However, the interpretation of the coefficient is not intuitively appealing (what does it mean for a log odds to decrease by .01?). Therefore the coefficient is converted to an odds ratio. The odds ratio tells us the percent change in the odds of achieving 13 or more outcomes for a unit change in the independent variable. For each additional year in age, the odds of having met 13 or more outcomes decreases by 1 percent. The odds of achieving 13 or more outcomes is 68.6 (.314-1*100) percent lower for individuals living in group homes than for individuals living in family homes.

Regression Results: 13 or More Outcomes Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Female	0.127	1.136	0.152
Age	-0.010	0.990	0.003
Independent/Supported Living	0.538	1.712	0.000
Group Home	-1.160	0.314	0.000
Cerebral Palsy	0.320	1.378	0.042
Autism	0.776	2.172	0.003
Other Disability	0.863	2.371	0.004
Medium-Size Area	0.263	1.301	0.057
Large-Size Area	0.216	1.242	0.110
Fits One or More Drug Profile	-0.145	0.865	0.323

Number	2,496

These results show:

- Age significantly affects the likelihood of achieving 13 or more outcomes. As individuals age, they are less likely to achieve 13 or more outcomes net of other factors.
- Controlling for other factors, living in a group home decreases the likelihood that a person will achieve 13 or more outcomes as compared to living in a family home, whereas living in an independent/supported living setting increases the likelihood of achieving 13 or more outcomes as compared to living in a family home.
- Controlling for other factors, persons with a primary disability of Cerebral Palsy, Autism, or in the "other disability" category are more likely to achieve 13 or more outcomes than persons with mental retardation as a primary disability.
- Controlling for other factors, individuals who fit one or more drug profile do not differ significantly from those who do not fit a drug profile in their likelihood of achieving 13 or more outcomes.

The first two regression models provide no evidence that fitting a drug profile impacts outcomes. The next two regression models examine the impact of drug profile type on outcomes. Results from the regression model using percent of outcomes met as the dependent variable and a separate indicator for each drug profile type as independent variables are presented in the following table.

Regression Results: Percent Outcomes Met
July1, 2003 – June30, 2005

Independent Variables	Coefficient	T-Value	P-Value
Female	0.009	1.050	0.295
Age	-0.001	-3.970	0.000
Independent/Supported Living	0.055	4.600	0.000
Group Home	-0.143	-14.300	0.000
Cerebral Palsy	0.034	2.170	0.030
Autism	0.113	4.410	0.000
Other Disability	0.102	3.520	0.000
Medium-Size Area	0.037	2.920	0.004
Large-Size Area	0.015	1.170	0.241
Clozaril	-0.105	-1.340	0.181
Lithium	0.000	0.000	0.999
Mellaril > 25 MG	-0.014	-0.420	0.677
Two or more Anti-Seizure	-0.017	-0.740	0.462
Two or more Anti-Psychotic	-0.036	-1.460	0.144
Two or more Sedatives	0.013	0.350	0.726
Two or more SSRI	-0.004	-0.030	0.972
Two or more CNSS	0.085	0.580	0.560
Number	2,496		
R-Square	0.171		

Results show:

- Age, home type, primary disability, and medium size Area continue to significantly impact the percent of outcomes met.
- Individuals who fit the *Clozaril*, *Lithium*, *Mellaril*, *Two or More Anti-Seizure*, *Two or More Anti-Psychotic*, *Two or More Sedative*, *Two or More SSRI*, or *Two or more CNSS* profile do not differ significantly from individuals who do not fit each respective profile type in the percent of outcomes met.

Results from the regression model using '13 or More Outcomes Met' as the dependent variable and a separate indicator for each drug profile type as independent variables are presented in the following table.

Regression Results: 13 or More Outcomes Met
July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Female	0.129	1.137	0.147
Age	-0.010	0.990	0.003
Independent/Supported Living	0.551	1.734	0.000
Group Home	-1.144	0.319	0.000
Cerebral Palsy	0.303	1.354	0.055
Autism	0.826	2.284	0.002
Other Disability	0.862	2.368	0.004
Medium-Size Area	0.269	1.308	0.052
Large-Size Area	0.224	1.251	0.099
Clozaril	0.280	1.323	0.753
Lithium	-0.450	0.637	0.251
Mellaril > 25 MG	0.204	1.226	0.572
Two or more Anti-Seizure	-0.038	0.963	0.873
Two or more Anti-Psychotic	-0.511	0.600	0.080
Two or more Sedatives	0.066	1.068	0.869
Two or more SSRI	-0.043	0.958	0.972
Two or more CNSS	12.253	999.999	0.971
Number	2,496		

Results show:

- Age, home type, and primary disability continue to significantly impact the likelihood that 13 or more outcomes are achieved.
- Individuals who fit the *Clozaril*, *Lithium*, *Mellaril*, *Two or More Anti-Seizure*, *Two or More Anti-Psychotic*, *Two or More Sedative*, *Two or More SSRI*, or *Two or more CNSS* profile do not differ significantly from individuals who do not fit each respective profile type in the likelihood of achieving 13 or more outcomes.

Regression Analysis Results using Individual Outcome Measures

The impact of the drug profiles from the 25 regression models using individual POM outcomes as dependent variables are summarized in the following table. The table shows a positive sign when a drug profile has a significant and positive effect on an outcome. The table shows a negative sign when a drug profile has a significant and negative effect on an outcome. Blanks indicate that a drug profile has no significant effect on an outcome. Full regression results showing the coefficients, odds ratios, and t-values for each of the 25 models are presented in Appendix B.

Regression Results: Summary of Impact of Drug Profiles on POM Outcomes
July1, 2003 – June30, 2005

POM Outcomes	Clozaril	Lithium	Mellaril	2+ Anti-Seizure	2+ Anti-Psychotic	2+ Sedative	2+ SSRI	2+ CNSS
Chooses personal goals				-			+	
Chooses where and with whom they live								
Chooses where they work		-				-		
Has intimate relationships								
Satisfied with services								
Satisfied with personal life situations								
Chooses daily routine					-		+	
Has Privacy					+			
Decides when to share personal info			-				+	
Uses their environment								
Lives in integrated environments								
Participates in the life of community							+	
Interacts with members of the community								
Performs different social roles						-		
Has friends						-		
Is respected								
Chooses services								
Realizes personal goals								
Is connected to natural support networks								
Is safe								
Exercises rights								
Is treated fairly				-				
Has the best possible health								
Is free from abuse and neglect								
Experiences continuity and security								

The results show:

- Taking *Lithium* decreases the likelihood of *Choosing where one works*.
- Taking *Mellaril* reduces the likelihood of *Deciding when to share personal information*.
- Taking *Two or more Anti-Seizure* drugs decreases the likelihood that one *Chooses personal goals* and *Is treated fairly*.
- Taking *Two or more Anti-Psychotic* drugs reduces the odds of *Choosing one's daily routine* and increases the odds that one *Has Privacy*.
- Taking *Two or more Sedatives* reduces the likelihood that one *Chooses where they work, Performs different social roles,* and *Has friends*.
- Taking *Two or more SSRI* drugs increases the odds that one *Chooses personal goals, Chooses daily routine, Decides when to share personal information, and participates in the life of the community*.

The impact of the demographic controls from the 25 regression models using individual POM outcomes as dependent variables are summarized in the following table. The table shows a positive sign when a demographic variable has a significant and positive effect on an outcome. The table shows a negative sign when a variable has a significant and negative effect on an outcome. Blanks indicate that a variable has no significant effect on an outcome.

Regression Results: Summary of Impact of Demographic Controls on POM Outcomes
July1, 2003 – June30, 2005

POM Outcomes	Support for Outcome Present	Female	Age	Independent/Supported	Group Home	Cerebral Palsy	Autism	Other Disability	Medium-Size Area	Large-Size Area
Chooses personal goals	+		-						+	
Chooses where and with whom they live	+		-		-				+	
Chooses where they work	+	-	-		-	+				
Has intimate relationships	+	+		-	-					
Satisfied with services	+					-			+	-
Satisfied with personal life situations	+	-	+		-	-			+	
Chooses daily routine	+				-					
Has Privacy	+			+	-					
Decides when to share personal info	+		-	+	-	+		+		
Uses their environment	+				-	-			+	+
Lives in integrated environments	+				-	+	-	+		-
Participates in the life of community	+							+		
Interacts with members of the community	+							+	+	
Performs different social roles	+				-					-
Has friends	+		+							
Is respected	+	-		-	-					

Chooses services	+				+		-			+		+				
Realizes personal goals	+			-	+							+		-		
Is connected to natural support networks	+		-			-		-						+		
Is safe	+						+									-
Exercises rights	+			-			-							-		
Is treated fairly	+					-		-								
Has the best possible health	+		-		-											
Is free from abuse and neglect	+		-	+		-		-						+		+
Experiences continuity and security	+					-		-						+		

The results show:

- Individuals who have supports present for an outcome are significantly more likely to meet the outcome than are individuals who lack supports for the outcome for all 25 personal outcomes.
- Women are less likely to *choose where they work, feel satisfied with personal life situations, feel respected, be connected to natural support networks, have the best possible* health, and *be free from abuse and neglect* than are men. Women are more likely than men to *have intimate relationships*.
- Older individuals are less likely to *choose personal goals, choose where and with whom they live, choose where they work, decide when to share personal information, realize personal goals, exercise their rights,* and *have the best possible health* than are younger individuals. Older individuals are more likely to *be satisfied with personal life situations, have friends,* and *be free from abuse and neglect* than are younger individuals.
- Individuals who live in group homes are less likely than those who live in family/foster homes to *choose where and with whom they live, choose where they work, to have intimate relationships, be satisfied with personal life situations, choose their daily routine, have privacy, decide when to share personal information, use their environment, live in integrated environments, perform different social roles, feel respected, choose their services, be connected to natural support networks, exercise rights, be treated fairly, be free from abuse and neglect,* and *experience continuity and security*. Individuals who live in Group Homes are more likely than those who live in Family/Foster homes to *be safe*. Individuals who live in an independent/supported living setting are less likely than those who live in family/foster homes to *have intimate relationships, be respected, be connected to natural support networks, be treated fairly, be free from abuse and neglect,* and *experience continuity and security*. Individuals who live in an Independent/Supported Living setting are more likely than those who live in Family/Foster homes to *have privacy, decide when to share personal information, choose their services,* and *realize their personal goals*.
- Individuals with Cerebral Palsy are more likely than those with Mental Retardation to *choose where they work, decide when to share personal information,* and *live in integrated environments*. Individuals with Cerebral Palsy are less likely than individuals who are mentally retarded to *be satisfied with services, be satisfied with personal life situations,* and *use their environment*.

Individuals with an Other disability are more likely than those with Mental Retardation to *decide when to share personal information, live in integrated environments, participate in the life of the community, interact with members of the community, choose their services,* and *realize their personal goals*. Individuals with Autism are less likely than those with Mental Retardation to *live in integrated environments*. Individuals with Autism are more likely than those with Mental Retardation to *choose their services*.

- Individuals living in Medium-Size Areas are more likely than are those living in Small-Size Areas to *choose personal goals, choose where and with whom they live, choose where and with whom they live, be satisfied with services, be satisfied with personal life situations, use their environment, interact with members of the community, be free from abuse and neglect,* and *experience continuity and security*. Individuals who live in a Medium-Size Area are less likely than those who live in a Small-Size Area to *realize their personal goals, be connected to natural support networks,* and *exercise rights*. Individuals who live in Large-Size Areas are less likely than those in Small-Size Areas to *be satisfied with services, live in integrated environments, perform different social roles,* and *be safe*. Individuals living in Large-Size Areas are more likely to *use their environment* and *be free from abuse and neglect* than are individuals who live in Small-Size Areas.

Discussion and Recommendations

The purpose of this study is to assess the impact of several high-risk drug profiles on the outcomes achieved by individuals as indicated by the Personal Outcome Measures. The impact of fitting one or more drug profile, each individual drug profile type, and a set of demographic characteristics on several summary measures of POM outcomes achieved and each individual POM outcome is examined using regression analysis.

Individuals who fit one or more drug profile are no different from those who did not fit a drug profile in their overall percent of outcomes achieved or the likelihood of achieving 13 or more outcomes. Results also show no impact of the individual drug profiles on the percent of outcomes achieved or the likelihood of achieving 13 or more outcomes. However, six of the eight drug profiles do impact specific outcomes, although different profile types affect different outcomes. Several drug profiles decrease the likelihood that a specific outcome is achieved while a few increase the likelihood that other outcomes are achieved.

Drug profiles may impact outcomes by facilitating or inhibiting an individual's abilities or preferences, or by enabling or interfering with the use of services offered through the HCBS waiver. For instance, taking *Lithium* or *Two or more Sedatives* lowers the likelihood that an individual *Chooses where they work*. It is possible that taking *Lithium* or *Two or more Sedatives* inhibits with an individual's physical abilities so that they are less able to perform work-related tasks. This will in turn limit the available options for work. The *Lithium* or *Two or more Sedatives* may also result in behaviors that interfere with work, or act to depress motivation to engage in work. It is also possible that these

drugs result in behaviors or inhibit abilities to an extent that interfere with an individual's capacity to take advantage of Supported Employment Services or Nonresidential Support Services. In addition to producing relaxation and calmness, sedatives can result in slurred speech, uncertain reflexes, and a staggering gait. These more extreme side effects could certainly present obstacles to engaging in work, or waiver services that support employment.

Recommendation 1: Future drug studies should examine whether there are differences between those fitting a profile and others in their use of waiver services. The study should examine whether individuals fitting each profile are less likely to utilize waiver services that support finding and maintaining work. The study should also examine whether individuals fitting each profile are more likely to utilize behavioral services.

Recommendation 2: APD should consider adding a special outreach program to Supported Employment services that focuses on developing relations with employers who have work tasks that could be performed by individuals who may be struggling with obstacles created by medication side effects.

When they have a significant impact, the majority of drug profiles lower the likelihood of meeting an outcome. Taking *Two or more Sedatives* lessens the likelihood that an individual will *choose where they work, perform different social roles,* and *have friends*. Taking *Lithium* lowers the likelihood that an individual will *choose where they work,* taking *Mellaril* reduces the likelihood that an individual *decides when to share personal information*, taking *Two or more Anti-Seizure* medications lessens the likelihood that an individual *chooses personal goals* and is *treated fairly*.

Taking *Two or more SSRI* medications consistently increases an individual's likelihood of meeting a number of outcomes: *choose personal goals, choose their daily routine, decide when to share personal information,* and *participate in the life of the community*. The *Two or more SSRI* profile is the only profile that increases the likelihood of achieving outcomes with the exception of the *Two or more Antipsychotic profile*, which does so only for *has privacy*. Because SSRI medication acts as a stimulant, it may facilitate individuals' involvement in making choices and engaging in social interaction. Taking SSRI medication, even multiple kinds, may increase motivation to participate in activities, including waiver services, and to be involved in decision-making. This may in turn facilitate participation in making choices about their lives and involvement in activities in the community.

In contrast to SSRI medication, the drug profiles that decrease the likelihood of meeting outcomes involve medications that have a sedating effect. These drug profiles reduce the likelihood of outcomes related to making choices about one's life and involvement in social relationships. This suggests that profiles producing a strong sedating effect may impair individuals' ability to participate in choices about their lives and to sustain social relationships. To the extent that medication depresses the central nervous system, individuals' motivation and/or ability to be involved in choices about their lives or to engage in social relations with others may be diminished.

Recommendation 3: APD should consider focus group sessions with individuals who fit a drug profile to get a better sense of what impediments to choice and social interactions taking the drugs present.

Recommendation 4: APD should consider implementing special choice counseling for individuals who take medications with a sedating effect. The choice counseling could be patterned on that available to individuals transitioning from an intermediate care facility to community services, although the counseling may need to be targeted toward specific problems experienced by individuals on medication.

Recommendation 5: It is imperative that waiver recipients who take medication with a sedating effect have regular medication reviews, and that consulting pharmacists send the medication review report to recipients' physicians. Prior drug profile studies have shown that the majority of waiver recipients who take medication do not receive regular medication reviews. APD should ensure that the best practice protocols for medication reviews, developed by the medication review initiative, are distributed to and followed by support coordinators.

Recommendation 6: AHCA should consider including information about the impact of drugs with a sedating effect on outcomes in their report to Medicaid providers. It is important that prescribing physicians are aware that drugs that include sedation as a side effect act to lower personal outcomes for people with developmental disabilities. Because taking multiple medications with a sedating effect tends to intensify the sedation, physicians should be encouraged to limit prescriptions to no more than one drug with sedation as a side effect if at all possible.

None of the drug profiles affected the likelihood of *having the best possible health.* Waiver recipients who fit a drug profile were no less likely than others to have the best possible health. This is an encouraging finding in regard to the question of whether taking high-risk medication results in health problems. However, general indicators of health based on an individual's perception about her or his health have limitations as compared to external health indicators (for instance, blood pressure or disease). To more thoroughly address this question, future research should examine specific health-related factors of those fitting drug profiles as compared to others.

Recommendation 7: Future studies should examine concrete health indicators of individuals fitting a drug profile as compared to individuals who do not fit a drug profile. Health indicators such as doctor's visits, hospital records, existence of disease, or frequency of illness should be examined.

An individual's sex also affects some of the outcomes. Sex has no significant impact on the odds of achieving the outcome in the majority of the models. However, women are less likely to *Choose where they work*, feel *Satisfied with personal life situations*, feel *Respected*, be *Connected to natural support networks*, *Have the best possible health*, and be *Free from abuse and neglect*. Women are also more likely than men to *Have intimate*

relationships. Sex may impact outcomes because women and men are treated differently, or because women and men have different preferences on average. For instance, women may be less likely to *choose where they work* because sex discrimination in employment is also a problem amongst people with developmental disabilities, or because women choose types of or places to work that are more difficult to obtain than those chosen by men.

Recommendation 8: Future research should examine why developmentally disabled women are less likely to choose where they work than developmentally disabled men. Do women and men choose different types or places of work? Or do women experience differential treatment in obtaining work?

Recommendation 9: Developmentally disabled women appear to be more at risk for abuse and neglect than developmentally disabled men. APD should consider modifying abuse and neglect training to highlight this issue, and consider investigating what puts women at higher risk for abuse and neglect.

Recommendation 10: Future studies should examine why women are less likely than men to have the best possible health. Studies that examine concrete measures of health should include an analysis of differences between women and men in health indicators. Are there particular health problems that women tend to experience that lower their health relative to men?

As individuals age, they are less likely to *Choose personal goals*, *Choose where and with whom they live*, *Choose where they work*, *Decide when to share personal info*, *Realize personal goals*, *Exercise rights*, and *Have the best possible health*, but more likely to be *Satisfied with personal life situations*, *Have friends*, and be *Free from abuse and neglect*. Developmentally disabled individuals' reduced likelihood of participating in choices about their lives, realizing goals, and exercising rights as they age may stem from the loss of institutional resources in school settings when individuals are old enough to graduate from high school. Resources available in schools offer supports for making choices, achieving goals, and exercising rights. It is also possible that health problems contribute to lessened choice, goals, and rights among individuals as they age. We see that individuals are less likely to *have the best possible health* as they age. As health deteriorates, it may interfere with a person's ability to engage in choices, achieve goals, and exercise rights.

Recommendation 11: Future studies should examine the root of the declining choice, goals, and rights associated with aging. Policy recommendations require determining whether this association stems from a loss of resources available in school settings, a loss of abilities due to failing health, or some combination of the two.

Recommendation 12: Future studies should examine which health issues have a negative impact on achieving the best possible health as individuals age. Analyses should examine how diagnosis codes vary with age to determine what health problems individuals experience as they get older.

Home type most likely impacts outcomes because structures present in different home types either facilitate or inhibit individual choices and goals. For instance, it is not surprising that individuals living in independent/supported living settings are less likely than those in family/foster homes to *have intimate relationships* or be *connected to natural support networks* since these are built into family/foster homes but are lacking in independent/supported living settings. Individuals living in an independent/support living environment are also more likely than those living in a family/foster home setting to *Have privacy*, *Decide when to share personal info*, *Choose services*, and *Realize personal goals*.

Similarly, individuals living in a group home may be less likely than those in family/foster homes to *choose their daily routine*, *have privacy*, *decide when to share personal information*, and *exercise rights* because group homes usually have rules and structures to help manage the routines of all residents that interfere with these goals. These individuals are also less likely to *Choose where and with whom they live, Choose where they work,* be *Satisfied with personal life situations*, *Choose daily routine, Have privacy*, *Decide when to share personal info, Use their environment*, *Live in integrated environments, Perform different social roles, Choose services,* and *Exercise rights*. It is interesting to note, however, that the presence of these same rules may influence the fact that individuals living in a group home are more likely than those in a family/foster home to feel *Safe*.

Recommendation 13: Given that a large number of outcomes are less likely to be achieved by individuals living in group homes, APD should consider implementing guidelines for group homes that help them structure the living environment to maximize individual choice in living arrangements, services, and daily routine. APD should also consider implementing new programs that help transition individuals out of group homes.

Individuals with cerebral palsy are less likely than those with mental retardation to be *Satisfied with services*, be *Satisfied with personal life situations*, and *Use their environment*. Individuals with mental retardation are less likely than others to achieve seven of the twenty-five outcomes. Intellectual disability is clearly an important obstacle to an individual's ability to engage in community activities and to make choices about one's life. Because this is the primary disability for a majority of the DD HCBS population, it should be the focus of APD initiatives toward improving outcomes.

Recommendation 14: APD should consider focus group sessions to determine why recipients with cerebral palsy have lower levels of satisfaction with services. APD should also consider ways to improve waiver services to better facilitate individuals with cerebral palsy in using their environment.

Recommendation 15: APD should examine the reasons that mentally retarded individuals lack choice in services. Do they experience barriers to participating in current waiver services? Are desired services not currently available as waiver services?

Individuals' outcomes are impacted by living in Areas of differing sizes. Areas of different sizes may vary in the availability of services, obstacles to receiving services, and options and obstacles present in the physical environment. For instance, if individuals are generally more densely concentrated in medium-sized as opposed to small-sized Areas, it may help explain why individuals in medium-sized Area are more likely to *interact with members of the community*. Similarly, individuals living in large-sized Areas may feel less *Safe* than those in small-size Areas because large-size Areas are characterized by larger cities with higher rates of violent crime.

Recommendation 16: Future studies should examine the availability of waiver services across different areas to determine whether a lack of services drives any of the effect of area-size on outcomes.

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Appendix A

For the Psychotherapeutic Study we identified (profiled) consumers with drug claims for at least one of the following seven medications or groups of medications:

1. Clozaril

2. Lithium (includes CIBALTH, ESKALITH, LITHOBID)

3. Mellaril > 25 mg

4. Phenobarb and other anti-seizure

OTHER ANTI-SEIZURE		
BUTISOL SODIUM	FELBATOL	
CARBATROL	GABITRIL	PRIMIDONE
CELONTIN KAPSEALS	KEPPRA	RIVOTRIL
CLONAPAM	KLONOPIN	SECONAL
CLONAZEPAM	LAMICTAL	TEGRETOL
DEPAKENE	MEBARAL	TOPAMAX
DEPAKOTE	MYSOLINE	TRILEPTAL
DILANTIN	NEURONTIN	ZARONTIN
EPITOL	PEGANONE	ZONEGRAN

5. Two or More Antipsychotic

ANTI-PSYCHOTICS		
Typical		**Atypical**
ABILIFY	PERMITIL	CLOZARIL
HALDOL	PROLIXIN	GEODON
LOXITANE	SERENTIL	RISPERDAL
MELLARIL	STELAZINE	SEROQUEL
MOBAN	THORAZINE	ZYPREXA
NAVANE	TRILAFON	
ORAP		

6. Two or More Sedatives

SEDATIVES/HYPNOTICS	
Benzodiazepines	**Non-Benzodiazepines**
ATIVAN	AMBIEN
DALMANE	AQUACHLORAL SUPPRETTES
DIASTAT	ATARAX
HALCION	BUSPAR
LIBRIUM	EQUANIL
PROSOM	SOMNOTE
RESTORIL	SONATA
SERAX	VISTARIL
TRANXENE T-TAB	

VALIUM VERSED XANAX	

7. Two or More SSRI

SSRI
CELEXA
LEXAPRO
LUVOX
PAXIL
PROZAC
SARAFEM
ZOLOFT

8. Two or More CNSS

CNSS
ADDERALL
AMPHETAMINE SALTS
CONCERTA
CYLERT
DESOXYN
DESOXYN GRADUMET
DEXMETHYLPHENIDATE HCL
METADATE
METHAMPHETAMINE
METHYLIN
METHYLPHENIDATE HCL
PEMOLINE
RITALIN LA

Appendix B: Regression Results for Individual POM Items

Regression Results: Outcome 'Chooses Personal Goals' Met
July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.525	92.334	0.000
Female	-0.024	0.977	0.866
Age	-0.017	0.984	0.002
Independent/Supported Living	-0.007	0.993	0.971
Group Home	-0.140	0.869	0.405
Cerebral Palsy	0.250	1.284	0.335
Autism	0.286	1.330	0.501
Other Disability	0.846	2.330	0.085
Medium-Size Area	0.561	1.752	0.011
Large-Size Area	0.363	1.438	0.090
Clozaril	-0.443	0.642	0.781
Lithium	-0.395	0.674	0.448
Mellaril > 25 MG	0.640	1.897	0.234
Two or more Anti-Seizure	-0.741	0.477	0.046
Two or more Anti-Psychotic	-0.212	0.809	0.603
Two or more Sedatives	0.027	1.027	0.965
Two or more SSRI	2.335	10.325	0.050
Two or more CNSS	-0.113	0.893	0.963
Number	2,496		

Regression Results: Outcome 'Chooses Where and With Whom They Live' Met
July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.501	90.122	0.000
Female	0.044	1.045	0.769
Age	-0.015	0.985	0.006
Independent/Supported Living	0.020	1.020	0.918
Group Home	-1.688	0.185	0.000
Cerebral Palsy	0.286	1.331	0.283
Autism	0.485	1.624	0.285
Other Disability	0.634	1.885	0.207
Medium-Size Area	0.544	1.723	0.021
Large-Size Area	0.155	1.167	0.504
Clozaril	0.753	2.124	0.610
Lithium	0.425	1.530	0.478
Mellaril > 25 MG	0.418	1.519	0.476
Two or more Anti-Seizure	-0.144	0.866	0.726
Two or more Anti-Psychotic	0.061	1.063	0.893
Two or more Sedatives	0.629	1.875	0.367
Two or more SSRI	1.213	3.362	0.489
Two or more CNSS	11.088	999.999	0.985
Number	2,496		

Regression Results: Outcome 'Chooses Where They Work' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.100	60.341	0.000
Female	-0.386	0.680	0.006
Age	-0.017	0.983	0.001
Independent/Supported Living	0.168	1.183	0.348
Group Home	-0.559	0.572	0.002
Cerebral Palsy	0.613	1.846	0.014
Autism	0.343	1.409	0.363
Other Disability	0.100	1.105	0.797
Medium-Size Area	0.165	1.180	0.454
Large-Size Area	0.132	1.141	0.544
Clozaril	0.599	1.821	0.699
Lithium	-1.768	0.171	0.004
Mellaril > 25 MG	-0.112	0.894	0.858
Two or more Anti-Seizure	0.203	1.225	0.577
Two or more Anti-Psychotic	0.588	1.800	0.168
Two or more Sedatives	-1.297	0.273	0.036
Two or more SSRI	1.200	3.320	0.494
Two or more CNSS	15.066	999.999	0.980
Number	2,496		

Regression Results: Outcome 'Has Intimate Relationships' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	3.973	53.160	0.000
Female	0.292	1.339	0.022
Age	0.000	1.000	0.959
Independent/Supported Living	-0.565	0.568	0.002
Group Home	-0.894	0.409	0.000
Cerebral Palsy	0.069	1.072	0.771
Autism	0.642	1.900	0.106
Other Disability	-0.106	0.899	0.804
Medium-Size Area	-0.146	0.865	0.447
Large-Size Area	-0.297	0.743	0.112
Clozaril	-0.632	0.532	0.695
Lithium	0.021	1.021	0.967
Mellaril > 25 MG	0.241	1.272	0.620
Two or more Anti-Seizure	0.314	1.369	0.351
Two or more Anti-Psychotic	0.086	1.090	0.822
Two or more Sedatives	-0.216	0.806	0.703
Two or more SSRI	-10.705	0.001	0.977
Two or more CNSS	-0.114	0.892	0.959
Number	2,496		

Regression Results: Outcome 'Satisfied with Services' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	3.908	49.798	0.000
Female	-0.005	0.995	0.968
Age	0.008	1.008	0.061
Independent/Supported Living	0.247	1.280	0.153
Group Home	0.099	1.104	0.496
Cerebral Palsy	-0.498	0.608	0.030
Autism	0.652	1.919	0.081
Other Disability	0.776	2.173	0.068
Medium-Size Area	0.382	1.464	0.041
Large-Size Area	-0.359	0.699	0.048
Clozaril	0.968	2.632	0.365
Lithium	0.083	1.087	0.868
Mellaril > 25 MG	-0.258	0.773	0.582
Two or more Anti-Seizure	-0.566	0.568	0.061
Two or more Anti-Psychotic	0.211	1.235	0.542
Two or more Sedatives	-0.132	0.877	0.800
Two or more SSRI	0.180	1.197	0.914
Two or more CNSS	15.413	999.999	0.971
Number	2,496		

Regression Results: Outcome 'Satisfied with Personal Life Sitations' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	3.118	22.592	0.000
Female	-0.262	0.769	0.025
Age	0.013	1.013	0.004
Independent/Supported Living	-0.142	0.867	0.405
Group Home	-0.340	0.712	0.013
Cerebral Palsy	-0.589	0.555	0.005
Autism	0.356	1.427	0.340
Other Disability	-0.284	0.753	0.460
Medium-Size Area	0.487	1.627	0.005
Large-Size Area	0.298	1.347	0.073
Clozaril	-0.885	0.413	0.397
Lithium	-0.117	0.890	0.793
Mellaril > 25 MG	-0.170	0.844	0.700
Two or more Anti-Seizure	0.047	1.048	0.885
Two or more Anti-Psychotic	-0.233	0.792	0.473
Two or more Sedatives	-0.475	0.622	0.327
Two or more SSRI	0.878	2.407	0.499
Two or more CNSS	13.732	999.999	0.976
Number	2,496		

Regression Results: Outcome 'Chooses Daily Routine' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	5.743	311.937	0.000
Female	0.128	1.137	0.506
Age	0.005	1.005	0.482
Independent/Supported Living	0.328	1.388	0.226
Group Home	-2.033	0.131	0.000
Cerebral Palsy	0.222	1.248	0.536
Autism	0.432	1.540	0.427
Other Disability	1.090	2.974	0.119
Medium-Size Area	0.371	1.449	0.224
Large-Size Area	-0.405	0.667	0.171
Clozaril	0.905	2.471	0.683
Lithium	-0.081	0.922	0.916
Mellaril > 25 MG	0.209	1.233	0.781
Two or more Anti-Seizure	-0.465	0.628	0.384
Two or more Anti-Psychotic	-1.111	0.329	0.037
Two or more Sedatives	1.208	3.346	0.129
Two or more SSRI	4.301	73.765	0.000
Two or more CNSS	10.366	999.999	0.984
Number	2,496		

Regression Results: Outcome 'Has Privacy' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.611	100.590	0.000
Female	-0.067	0.935	0.653
Age	0.008	1.008	0.152
Independent/Supported Living	0.489	1.630	0.031
Group Home	-1.009	0.365	0.000
Cerebral Palsy	-0.111	0.895	0.692
Autism	-0.001	0.999	0.999
Other Disability	-0.645	0.525	0.190
Medium-Size Area	-0.001	0.999	0.995
Large-Size Area	-0.088	0.916	0.683
Clozaril	-0.758	0.469	0.623
Lithium	0.248	1.281	0.670
Mellaril > 25 MG	-0.523	0.593	0.332
Two or more Anti-Seizure	-0.369	0.691	0.354
Two or more Anti-Psychotic	0.855	2.350	0.033
Two or more Sedatives	0.021	1.021	0.976
Two or more SSRI	1.722	5.598	0.161
Two or more CNSS	13.956	999.999	0.974
Number	2,496		

Regression Results: Outcome 'Decides When to Share Personal Information' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.003	54.768	0.000
Female	0.095	1.099	0.407
Age	-0.023	0.977	0.000
Independent/Supported Living	0.344	1.411	0.040
Group Home	-0.796	0.451	0.000
Cerebral Palsy	0.670	1.954	0.004
Autism	0.690	1.994	0.079
Other Disability	0.985	2.677	0.036
Medium-Size Area	0.262	1.300	0.113
Large-Size Area	0.170	1.185	0.292
Clozaril	0.912	2.489	0.490
Lithium	-0.080	0.923	0.855
Mellaril > 25 MG	-1.053	0.349	0.013
Two or more Anti-Seizure	-0.037	0.964	0.903
Two or more Anti-Psychotic	0.069	1.071	0.833
Two or more Sedatives	0.405	1.499	0.445
Two or more SSRI	2.841	17.128	0.018
Two or more CNSS	-0.043	0.958	0.983
Number	2,496		

Regression Results: Outcome 'Uses Their Environment' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	5.503	245.346	0.000
Female	-0.113	0.893	0.480
Age	0.008	1.009	0.155
Independent/Supported Living	0.389	1.476	0.065
Group Home	-0.682	0.506	0.001
Cerebral Palsy	-0.784	0.456	0.003
Autism	0.068	1.070	0.871
Other Disability	-0.542	0.582	0.219
Medium-Size Area	0.803	2.232	0.001
Large-Size Area	0.515	1.673	0.035
Clozaril	-1.858	0.156	0.200
Lithium	-0.077	0.926	0.901
Mellaril > 25 MG	-0.252	0.778	0.688
Two or more Anti-Seizure	-0.698	0.498	0.064
Two or more Anti-Psychotic	-0.292	0.746	0.555
Two or more Sedatives	-0.390	0.677	0.549
Two or more SSRI	1.072	2.922	0.564
Two or more CNSS	16.965	999.999	0.969
Number	2,496		

Regression Results: Outcome 'Lives in Integrated Environments' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.301	73.772	0.000
Female	-0.107	0.898	0.483
Age	-0.001	0.999	0.826
Independent/Supported Living	0.290	1.336	0.123
Group Home	-2.182	0.113	0.000
Cerebral Palsy	0.668	1.950	0.010
Autism	-1.193	0.303	0.003
Other Disability	1.735	5.667	0.001
Medium-Size Area	-0.403	0.668	0.100
Large-Size Area	-0.716	0.489	0.003
Clozaril	-10.150	0.001	0.984
Lithium	0.862	2.368	0.152
Mellaril > 25 MG	-0.157	0.855	0.829
Two or more Anti-Seizure	-0.239	0.787	0.533
Two or more Anti-Psychotic	0.019	1.019	0.972
Two or more Sedatives	0.129	1.137	0.839
Two or more SSRI	1.274	3.575	0.654
Two or more CNSS	-1.630	0.196	0.255
Number	2,496		

Regression Results: Outcome 'Participates in Life of the Community' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.127	62.011	0.000
Female	-0.058	0.944	0.653
Age	0.001	1.001	0.787
Independent/Supported Living	-0.098	0.906	0.576
Group Home	-0.098	0.907	0.533
Cerebral Palsy	0.125	1.134	0.594
Autism	0.498	1.645	0.188
Other Disability	0.945	2.573	0.033
Medium-Size Area	0.345	1.412	0.084
Large-Size Area	0.170	1.185	0.381
Clozaril	0.268	1.307	0.835
Lithium	-0.098	0.907	0.845
Mellaril > 25 MG	-0.069	0.933	0.885
Two or more Anti-Seizure	0.079	1.083	0.822
Two or more Anti-Psychotic	0.141	1.151	0.706
Two or more Sedatives	0.115	1.122	0.836
Two or more SSRI	2.420	11.246	0.045
Two or more CNSS	-13.571	0.001	0.976
Number	2,496		

Regression Results: Outcome 'Interacts with Members of the Community' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.578	97.290	0.000
Female	-0.152	0.859	0.287
Age	0.005	1.005	0.391
Independent/Supported Living	0.370	1.447	0.066
Group Home	-0.079	0.924	0.644
Cerebral Palsy	0.366	1.442	0.166
Autism	0.010	1.010	0.981
Other Disability	1.018	2.767	0.027
Medium-Size Area	0.497	1.643	0.025
Large-Size Area	0.060	1.062	0.781
Clozaril	0.906	2.473	0.401
Lithium	0.380	1.462	0.492
Mellaril > 25 MG	-0.914	0.401	0.096
Two or more Anti-Seizure	-0.583	0.559	0.135
Two or more Anti-Psychotic	0.053	1.054	0.900
Two or more Sedatives	-0.011	0.989	0.986
Two or more SSRI	-11.653	0.001	0.985
Two or more CNSS	-15.290	0.001	0.983
Number	2,496		

Regression Results: Outcome 'Performs Different Social Roles' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.766	117.460	0.000
Female	0.040	1.040	0.818
Age	0.012	1.012	0.068
Independent/Supported Living	-0.071	0.932	0.756
Group Home	-1.030	0.357	0.000
Cerebral Palsy	0.152	1.164	0.608
Autism	-0.095	0.910	0.834
Other Disability	-0.039	0.962	0.940
Medium-Size Area	-0.022	0.979	0.934
Large-Size Area	-0.583	0.558	0.021
Clozaril	-10.931	0.001	0.986
Lithium	0.439	1.552	0.491
Mellaril > 25 MG	-0.424	0.654	0.611
Two or more Anti-Seizure	-0.006	0.994	0.990
Two or more Anti-Psychotic	-0.542	0.581	0.376
Two or more Sedatives	-1.992	0.136	0.024
Two or more SSRI	0.867	2.379	0.672
Two or more CNSS	-14.604	0.001	0.984
Number	2,496		

Regression Results: Outcome 'Has Friends' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.698	109.669	0.000
Female	-0.110	0.896	0.465
Age	0.019	1.019	0.001
Independent/Supported Living	-0.301	0.740	0.136
Group Home	-0.101	0.904	0.587
Cerebral Palsy	0.457	1.580	0.097
Autism	-0.395	0.674	0.323
Other Disability	0.292	1.339	0.523
Medium-Size Area	0.007	1.007	0.976
Large-Size Area	-0.309	0.734	0.178
Clozaril	-0.107	0.899	0.949
Lithium	0.615	1.849	0.325
Mellaril > 25 MG	-1.143	0.319	0.054
Two or more Anti-Seizure	-0.132	0.876	0.751
Two or more Anti-Psychotic	-0.405	0.667	0.362
Two or more Sedatives	-2.192	0.112	0.002
Two or more SSRI	0.202	1.224	0.915
Two or more CNSS	-10.132	0.001	0.987
Number	2,496		

Regression Results: Outcome 'Is Respected' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.953	141.618	0.000
Female	-0.318	0.728	0.035
Age	0.005	1.005	0.362
Independent/Supported Living	-0.504	0.604	0.015
Group Home	-0.710	0.492	0.000
Cerebral Palsy	-0.252	0.777	0.349
Autism	0.401	1.493	0.389
Other Disability	0.157	1.170	0.759
Medium-Size Area	0.176	1.192	0.438
Large-Size Area	-0.199	0.819	0.367
Clozaril	0.439	1.551	0.765
Lithium	0.253	1.288	0.669
Mellaril > 25 MG	0.257	1.293	0.657
Two or more Anti-Seizure	0.244	1.277	0.539
Two or more Anti-Psychotic	-0.236	0.790	0.581
Two or more Sedatives	0.256	1.292	0.700
Two or more SSRI	0.119	1.126	0.952
Two or more CNSS	-2.327	0.098	0.107
Number	2,496		

Regression Results: Outcome 'Chooses Services' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	5.365	213.787	0.000
Female	0.057	1.059	0.730
Age	-0.011	0.989	0.083
Independent/Supported Living	0.518	1.678	0.019
Group Home	-0.621	0.538	0.004
Cerebral Palsy	0.380	1.462	0.170
Autism	1.552	4.722	0.003
Other Disability	1.510	4.526	0.011
Medium-Size Area	-0.060	0.942	0.834
Large-Size Area	-0.231	0.794	0.392
Clozaril	1.278	3.589	0.479
Lithium	0.765	2.150	0.285
Mellaril > 25 MG	0.547	1.729	0.406
Two or more Anti-Seizure	0.331	1.393	0.452
Two or more Anti-Psychotic	-0.818	0.441	0.065
Two or more Sedatives	0.412	1.509	0.564
Two or more SSRI	-9.854	0.001	0.990
Two or more CNSS	17.555	999.999	0.985
Number	2,496		

Regression Results: Outcome 'Realizes Personal Goals' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	3.375	29.224	0.000
Female	0.162	1.176	0.156
Age	-0.024	0.977	0.000
Independent/Supported Living	0.502	1.652	0.002
Group Home	0.067	1.070	0.616
Cerebral Palsy	0.160	1.173	0.454
Autism	0.353	1.423	0.317
Other Disability	1.263	3.537	0.004
Medium-Size Area	-0.725	0.484	0.000
Large-Size Area	-0.297	0.743	0.076
Clozaril	0.692	1.997	0.475
Lithium	-0.087	0.916	0.845
Mellaril > 25 MG	-0.030	0.970	0.946
Two or more Anti-Seizure	0.176	1.193	0.563
Two or more Anti-Psychotic	-0.116	0.890	0.729
Two or more Sedatives	0.105	1.110	0.835
Two or more SSRI	-0.681	0.506	0.659
Two or more CNSS	10.039	999.999	0.975
Number	2,496		

Regression Results: Outcome 'Is Connected to Natural Support Networks' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	3.336	28.097	0.000
Female	-0.224	0.799	0.045
Age	0.006	1.006	0.126
Independent/Supported Living	-1.289	0.275	0.000
Group Home	-1.688	0.185	0.000
Cerebral Palsy	0.000	1.000	0.998
Autism	0.445	1.560	0.246
Other Disability	-0.102	0.903	0.790
Medium-Size Area	0.400	1.491	0.017
Large-Size Area	0.218	1.244	0.177
Clozaril	-0.397	0.672	0.712
Lithium	-0.289	0.749	0.490
Mellaril > 25 MG	-0.522	0.593	0.205
Two or more Anti-Seizure	0.026	1.026	0.932
Two or more Anti-Psychotic	-0.240	0.786	0.439
Two or more Sedatives	0.776	2.173	0.146
Two or more SSRI	-12.180	0.001	0.972
Two or more CNSS	-0.582	0.559	0.770
Number	2,496		

Regression Results: Outcome 'Is Safe' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	3.404	30.093	0.000
Female	-0.183	0.833	0.116
Age	0.004	1.005	0.302
Independent/Supported Living	-0.054	0.947	0.741
Group Home	0.351	1.420	0.012
Cerebral Palsy	-0.385	0.681	0.072
Autism	-0.320	0.726	0.361
Other Disability	-0.486	0.615	0.210
Medium-Size Area	-0.153	0.858	0.391
Large-Size Area	-0.386	0.680	0.027
Clozaril	-1.740	0.176	0.075
Lithium	0.345	1.411	0.466
Mellaril > 25 MG	-0.331	0.718	0.477
Two or more Anti-Seizure	0.035	1.035	0.909
Two or more Anti-Psychotic	-0.240	0.786	0.471
Two or more Sedatives	-0.087	0.916	0.868
Two or more SSRI	0.273	1.314	0.819
Two or more CNSS	-11.054	0.001	0.975
Number	2,496		

Regression Results: Outcome 'Exercises Rights' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	4.739	114.325	0.000
Female	-0.042	0.959	0.782
Age	-0.014	0.986	0.013
Independent/Supported Living	-0.099	0.906	0.632
Group Home	-1.291	0.275	0.000
Cerebral Palsy	0.469	1.599	0.089
Autism	0.765	2.148	0.099
Other Disability	0.381	1.463	0.453
Medium-Size Area	-0.472	0.624	0.040
Large-Size Area	-0.394	0.675	0.078
Clozaril	-0.998	0.369	0.487
Lithium	-0.544	0.580	0.378
Mellaril > 25 MG	0.031	1.031	0.959
Two or more Anti-Seizure	-0.065	0.937	0.874
Two or more Anti-Psychotic	0.356	1.428	0.429
Two or more Sedatives	-0.965	0.381	0.113
Two or more SSRI	0.960	2.610	0.601
Two or more CNSS	11.124	999.999	0.985
Number	2,496		

Regression Results: Outcome 'Is Treated Fairly' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	6.262	524.041	0.000
Female	-0.214	0.808	0.272
Age	0.005	1.005	0.490
Independent/Supported Living	-1.140	0.320	0.000
Group Home	-0.865	0.421	0.000
Cerebral Palsy	-0.096	0.909	0.787
Autism	-0.658	0.518	0.233
Other Disability	-0.663	0.515	0.242
Medium-Size Area	-0.050	0.951	0.869
Large-Size Area	-0.274	0.761	0.352
Clozaril	0.322	1.380	0.861
Lithium	-0.313	0.731	0.661
Mellaril > 25 MG	0.917	2.501	0.199
Two or more Anti-Seizure	-0.911	0.402	0.039
Two or more Anti-Psychotic	-0.571	0.565	0.273
Two or more Sedatives	-0.301	0.740	0.708
Two or more SSRI	0.432	1.540	0.875
Two or more CNSS	-0.364	0.695	0.923
Number	2,496		

Regression Results: Outcome 'Has the Best Possible Health' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	3.502	33.183	0.000
Female	-0.267	0.766	0.020
Age	-0.012	0.988	0.004
Independent/Supported Living	0.090	1.094	0.576
Group Home	0.247	1.280	0.066
Cerebral Palsy	-0.136	0.873	0.517
Autism	0.182	1.199	0.595
Other Disability	-0.236	0.790	0.572
Medium-Size Area	0.140	1.150	0.421
Large-Size Area	0.112	1.119	0.506
Clozaril	0.800	2.225	0.429
Lithium	0.083	1.086	0.853
Mellaril > 25 MG	0.325	1.383	0.481
Two or more Anti-Seizure	-0.438	0.645	0.135
Two or more Anti-Psychotic	0.044	1.045	0.897
Two or more Sedatives	0.604	1.830	0.234
Two or more SSRI	0.766	2.150	0.587
Two or more CNSS	10.941	999.999	0.973
Number	2,496		

Regression Results: Outcome 'Is Free From Abuse and Neglect' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	2.734	15.391	0.000
Female	-0.341	0.711	0.006
Age	0.017	1.017	0.000
Independent/Supported Living	-1.104	0.331	0.000
Group Home	-0.768	0.464	0.000
Cerebral Palsy	-0.220	0.802	0.331
Autism	1.006	2.736	0.051
Other Disability	-0.243	0.785	0.562
Medium-Size Area	0.830	2.293	0.000
Large-Size Area	0.691	1.996	0.000
Clozaril	-1.520	0.219	0.092
Lithium	-0.553	0.575	0.213
Mellaril > 25 MG	-0.131	0.877	0.777
Two or more Anti-Seizure	0.151	1.163	0.662
Two or more Anti-Psychotic	0.100	1.106	0.775
Two or more Sedatives	0.516	1.675	0.415
Two or more SSRI	11.795	999.999	0.981
Two or more CNSS	-1.215	0.297	0.508
Number	2,496		

Regression Results: Outcome 'Experiences Continuity and Security' Met

July1, 2003 – June30, 2005

Independent Variables	Coefficient	Odds Ratio	P-Value
Support	3.903	49.567	0.000
Female	0.082	1.086	0.514
Age	0.006	1.006	0.229
Independent/Supported Living	-0.960	0.383	0.000
Group Home	-0.469	0.626	0.002
Cerebral Palsy	0.074	1.077	0.749
Autism	0.139	1.149	0.709
Other Disability	0.281	1.325	0.507
Medium-Size Area	0.476	1.609	0.013
Large-Size Area	0.171	1.186	0.364
Clozaril	-11.745	0.000	0.981
Lithium	0.016	1.016	0.976
Mellaril > 25 MG	0.338	1.402	0.474
Two or more Anti-Seizure	-0.267	0.766	0.422
Two or more Anti-Psychotic	-0.109	0.897	0.766
Two or more Sedatives	0.031	1.031	0.957
Two or more SSRI	-1.349	0.260	0.331
Two or more CNSS	-12.032	0.000	0.989
Number	2,496		