The Use of Psychotropic Medications in Intellectual and Developmental Disabilities: The Good, the Bad and the Costly

Joseph L. Calles, Jr, MD

Objectives:

1. Identify effective methods for the practical application of concepts related to improving the delivery of services for persons with developmental disabilities

2. Identify advances in clinical assessment and management of selected healthcare issues related to persons with developmental disabilities

Notes:
The Use of Psychotropic Medications in Intellectual and Developmental Disabilities: The Good, the Bad and the Costly

Joseph L. Calles, Jr., M.D.
Developmental Disabilities Conference
April 22, 2014

Professional Information

- Associate Professor of Psychiatry, Western Michigan University Homer Stryker M.D. School of Medicine
- Consultant, Great Lakes Center for Autism Treatment and Research, Portage, MI
- Board Certified in General and Child & Adolescent Psychiatry
- Member, American Academy of Child & Adolescent Psychiatry (AACAP)
- Member, National Association for the Dually Diagnosed (NADD)

Disclosure Statement

- Dr. Calles has no financial relationships related to the topic of this presentation.
Preface

• Compared to child, adolescent and adult psychiatric populations, there has been relatively little psychopharmacologic research conducted in individuals with intellectual and developmental disabilities (IDDs).
• Therefore, some of the information in this presentation has been extrapolated from the general psychiatric literature.

Selected medications (generic & trade names) mentioned in this presentation

• Antipsychotics
  – aripiprazole (Abilify®)
  – clozapine (Clozaril®)
  – olanzapine (Zyprexa®)
  – quetiapine (Seroquel®)
  – risperidone (Risperdal®)
  – ziprasidone (Geodon®)

Selected medications (generic & trade names) mentioned in this presentation

• Antidepressants
  – citalopram (Celexa®)
  – fluoxetine (Prozac®)
  – fluvoxamine (Luvox®)
  – sertraline (Zoloft®)
  – venlafaxine (Effexor®)
Psychotropic Medications in IDDs: Background

- The two most common reasons for use of psychotropic medications in individuals with intellectual and developmental disabilities (IDDs) are to treat psychiatric disorders and/or to try to reduce/eliminate behaviors that are variously described as challenging, disruptive, aggressive, self-injurious, repetitive, or otherwise inappropriate.

Psychotropic Medications in IDDs: Background

- There has been an ongoing debate as to the extent of overlap between mental health problems and problem behaviors. There have been numerous studies showing that psychiatric morbidity among people with IDDs is associated with higher levels of behavioral problems.
- However, other studies have not found any association between psychiatric morbidity and problem behaviors.
- It needs to be kept in mind that oversimplified, “either-or” conceptualizations do not address the complexities of the systems surrounding all the various factors that impact on a person’s mental health and behavior.
Psychotropic Medications in IDD: Background

- In the U.K., the National Institute for Health and Care Excellence (NICE) recently published (January, 2014) their Quality Standards: Autism (http://www.nice.org.uk/guidance/qs51).
- In Quality statement 6, it’s stated that “Drug treatments have been shown to be ineffective in addressing the core features of autism.”
- In Quality statement 7, readers are reminded that “The causes of behaviour… can involve physical health conditions, mental health problems and environmental factors…”

Psychotropic Medications in IDD: Background

- NICE Quality Standards: Autism (cont.):
  - In Quality statement 8, it follows that “People with autism and behaviour that challenges are not offered antipsychotic medication for the behaviour unless it is being considered because psychosocial or other interventions are insufficient or cannot be delivered because of the severity of the behaviour.”
  - In Quality statement 6, it’s noted that “in certain circumstances, medication may be appropriate for the short-term treatment of challenging behaviour.”

Psychotropic Medications in IDD: Background

- Emerson, et al (2010), using a nationally representative sample of young Australian children, found that children with limited intellectual functioning make a disproportionate contribution to overall child psychiatric morbidity.
- Implications for public health and child and adolescent mental health services are discussed in the article.
Prevalence and odds ratios of “abnormal” scores on the SDQ* for intellectual status among 6-7-year-old Australian children

<table>
<thead>
<tr>
<th>Intellectual disabilities</th>
<th>ID</th>
<th>TD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental ratings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total difficulties (%)</td>
<td>24</td>
<td>17</td>
</tr>
<tr>
<td>Conduct difficulties (%)</td>
<td>34</td>
<td>19</td>
</tr>
<tr>
<td>Emotional difficulties (%)</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Hyperactivity (%)</td>
<td>36</td>
<td>19</td>
</tr>
<tr>
<td>Peer problems (%)</td>
<td>98</td>
<td>71</td>
</tr>
<tr>
<td>Pro-social behavior (%)</td>
<td>34</td>
<td>8</td>
</tr>
<tr>
<td>Odds ratios</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total difficulties</td>
<td>1.39**</td>
<td>1.78***</td>
</tr>
<tr>
<td>Conduct difficulties</td>
<td>1.39**</td>
<td>1.78***</td>
</tr>
<tr>
<td>Emotional difficulties</td>
<td>2.23**</td>
<td>2.52***</td>
</tr>
<tr>
<td>Hyperactivity</td>
<td>1.78**</td>
<td>1.98***</td>
</tr>
<tr>
<td>Peer problems</td>
<td>2.18**</td>
<td>2.52***</td>
</tr>
<tr>
<td>Pro-social behaviour</td>
<td>0.13***</td>
<td>0.08***</td>
</tr>
</tbody>
</table>

* SDQ = Strengths and Difficulties Questionnaire
** p < 0.01
*** p < 0.001

Psychotropic Medications in IDDs: Background

- In a study by Rosenberg, et al (2011), the lifetime prevalence of a psychiatric disorder by age 16 in youth with autism spectrum disorders (ASDs) was determined to be 49% in contrast to reported rates for the general population of 37%.

Multivariate logistic regression odds ratios (95% CI) of overall and individual parent-reported lifetime psychiatric comorbidities in ASD (n=2219)

<table>
<thead>
<tr>
<th>Any comorbidity</th>
<th>Any anxiety disorder</th>
<th>Any mood disorder</th>
<th>Attention deficit hyperactivity disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
<td></td>
</tr>
<tr>
<td>SRS= Social Responsiveness Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>124.06(2.41)</td>
<td>124.06(3.73)</td>
<td>124.06(4.82)</td>
<td>124.06(5.57)</td>
</tr>
<tr>
<td>242.31(3.35)</td>
<td>242.31(3.35)</td>
<td>242.31(3.35)</td>
<td>242.31(3.35)</td>
</tr>
<tr>
<td>32.6(1.61)</td>
<td>32.6(1.61)</td>
<td>32.6(1.61)</td>
<td>32.6(1.61)</td>
</tr>
<tr>
<td>240.6(5.8)</td>
<td>240.6(5.8)</td>
<td>240.6(5.8)</td>
<td>240.6(5.8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depression</th>
<th>Bipolar disorder</th>
<th>OCD/HOA or ASD</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>SRS&lt;50</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>SRS=50</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>SRS&gt;50</td>
<td>0.4</td>
<td>0.4</td>
</tr>
</tbody>
</table>

* Significant associations were observed between anxiety and/or mood disorders and IQ scores less than 70.

Rosenberg, et al 2011
Psychotropic Medications in IDDs: Background

- Davies & Oliver (2013) statistically analyzed published data regarding the age-related prevalence of aggression and self-injury in persons with IDDs.
- The analysis indicated that the relative risk of self-injury, and to a lesser extent aggression, increased with age until mid-adulthood, with some indication of a curvilinear relationship for self-injury (significantly increasing with age up to about ages 30-40, with notable decrease after the age of 50).

Prevalence of aggression (%/n) by age bands (years) for the eleven studies identified meeting selection criteria

<table>
<thead>
<tr>
<th>Study</th>
<th>Prevalence of aggression (%/n) by age bands (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1</td>
<td>25% (30)</td>
</tr>
<tr>
<td>Study 2</td>
<td>20% (20)</td>
</tr>
<tr>
<td>Study 3</td>
<td>30% (25)</td>
</tr>
<tr>
<td>Study 4</td>
<td>25% (20)</td>
</tr>
</tbody>
</table>

Prevalence of self-injury (%/n) by age bands (years) for the ten studies identified meeting selection criteria (cont.)

<table>
<thead>
<tr>
<th>Study</th>
<th>Prevalence of self-injury (%/n) by age bands (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1</td>
<td>25% (30)</td>
</tr>
<tr>
<td>Study 2</td>
<td>20% (20)</td>
</tr>
<tr>
<td>Study 3</td>
<td>30% (25)</td>
</tr>
<tr>
<td>Study 4</td>
<td>25% (20)</td>
</tr>
</tbody>
</table>
Psychotropic Medications in IDD: Background

- The atypical antipsychotics (AAs) are commonly prescribed for the management of serious behavioral disturbance in individuals with ASDs and/or IDDs.
- Risperidone (for ages 5-16 years) and aripiprazole (for ages 6-17 years) are the only two FDA-approved medications for irritability (aggression, self-harm, tantrums and/or mood lability) in children and adolescents with autism.

Coury, et al (2012), found that, in a sample of youth from the Autism Treatment Network, the use of AAs was common in ASDs:
- 4% of 3- to 5-year-olds;
- 14% of 6- to 11-year-olds; and
- 23% of 12- to 17-year-olds... were taking atypical antipsychotic medications.

Psychotropic Medications in IDD: The Good
Psychotropic Medications in IDDs: The Good

• Ching & Pringsheim (2012) concluded that “Evidence from two randomized controlled trials suggests that aripiprazole can be effective in treating some behavioral aspects of ASD in children. After treatment with aripiprazole, children showed less irritability, hyperactivity, and stereotypies (repetitive, purposeless actions).”

Psychotropic Medications in IDDs: The Good

• In the first prospective randomized clinical trial comparing the safety and efficacy of aripiprazole and risperidone (Ghanizadeh, et al, 2013), both lowered Aberrant Behavior Checklist (ABC) scores.
  • The safety and efficacy of aripiprazole (mean dose 5.5 mg/day) and risperidone (mean dose 1.12 mg/day) were comparable.

Psychotropic Medications in IDDs: The Good

• In a recent update, Baribeau & Anagnostou (2014) “… suggested that atypical antipsychotic medications ought only to be considered when behavioral interventions have been tried and failed, and when the physical risks associated with disruptive behavior exceed the risk of harm from medication.”
Psychotropic Medications in IDDs: The Bad

• There are several well-known adverse effects of psychotropic medications. The most common ones that are of especial concern are:
  – Metabolic abnormalities (weight gain, hyperglycemia and/or hyperlipidemia);
  – Hyperprolactinemia;
  – Extrapyramidal symptoms.

Metabolic Abnormalities: Weight Gain

• Almandil, et al (2013), conducted a review and meta-analysis of double-blind, randomized, controlled trials (RCTs) investigating the metabolic adverse effects associated with AA use in children and adolescents, with weight gain as the primary objective.
• Olanzapine, risperidone, and aripiprazole were all associated with statistically significant weight gain. Olanzapine was associated with the most weight gain and aripiprazole the least.
### Table 1: Study Population Characteristics

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Mean Difference</th>
<th>95% Confidence Interval</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nacul et al., 2009</td>
<td>0.05 (0.03, 0.07)</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Almandil et al., 2013</td>
<td>0.03 (0.02, 0.04)</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>Frolich et al., 2006</td>
<td>0.04 (0.03, 0.06)</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Mancia et al., 2009</td>
<td>0.02 (0.01, 0.03)</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td>Tamburino et al., 2008</td>
<td>0.03 (0.02, 0.04)</td>
<td>0.004</td>
<td></td>
</tr>
</tbody>
</table>

### Figure 1: Forest Plot

The forest plot shows the mean difference and 95% confidence intervals for each study. The funnel plot indicates minimal publication bias.

### Figure 2: Subgroup Analysis

- **Atrial Natriuretic Peptide (ANP):**
  - Mean Difference: 0.04 (0.02, 0.06)  p = 0.002
  - Test for overall effect: Z = 1.23 (p = 0.02)

- **Brain Natriuretic Peptide (BNP):**
  - Mean Difference: 0.02 (0.01, 0.03)  p = 0.003
  - Test for overall effect: Z = 1.32 (p = 0.02)

### Figure 3: Sensitivity Analysis

- Sensitivity analysis for ANP:
  - Mean Difference: 0.03 (0.02, 0.04)  p = 0.003
  - Test for overall effect: Z = 2.23 (p = 0.02)

- Sensitivity analysis for BNP:
  - Mean Difference: 0.01 (0.00, 0.02)  p = 0.01
  - Test for overall effect: Z = 1.32 (p = 0.02)
Metabolic Abnormalities: Weight Gain

- An additional concern is that children with IDDs may already be at higher risk for weight gain.
- An Australian study (De, et al, 2008) found that children (ages 2-18 years) with IDDs, vs. those in the general school population, were more likely to be overweight (24% vs. 17%) or obese (15% vs. 6%).
- Differences were statistically significant for overweight (p=.05) and obesity (p=.0003).

Metabolic Abnormalities: Hyperglycemia

- The objective was to compare the risk of type 2 diabetes in children and youth (6 to 24 years of age) for recent initiators of antipsychotic drugs vs. controls who had recently initiated another psychotropic medication.

Metabolic Abnormalities: Hyperglycemia (cont.)

- Bobo, et al (cont.): In the cohort of children 6 to 17 years of age, antipsychotic users had more than a 3-fold increased risk of type 2 diabetes (HR= 3.14 [95% CI = 1.50-6.56]).
- The risk increased significantly with increasing cumulative dose (P<.03).
- The risk was increased for use restricted to AAs (HR= 2.89 [95% CI = 1.64-5.10]) or to risperidone (HR= 2.20 [95% CI = 1.14-4.26]).
Adjusted Annual Incidence of Type 2 Diabetes Mellitus Among Children and Youth 6 to 17 Years of Age, According to Cumulative Antipsychotic Dose

Metabolic Abnormalities: Hyperlipidemia

- In a meta-analysis of short-term adverse effects of AAs in children and adolescents, Cohen, et al (2012), found that:
  - Quetiapine and olanzapine significantly increased cholesterol rates compared with placebo;
  - Olanzapine and quetiapine also significantly increased triglyceride levels compared with placebo.
Hyperprolactinemia

- Prolactin is a hormone produced in the anterior pituitary. Its most prominent actions are the stimulation of mammary gland development and milk production.
- Its secretion is stimulated by serotonin.
- Most antidepressants and newer antipsychotics have serotonergic activity. Therefore, use of those agents can increase secretion of prolactin (mildly for the antidepressants).

Hyperprolactinemia

- Prolactin secretion is inhibited by dopamine and gamma-aminobutyric acid (GABA).
- Antipsychotics (except clozapine and aripiprazole) increase secretion of prolactin by blocking the effects of dopamine on the pituitary gland.
- Benzodiazepines (e.g. clonazepam) enhance the effect of GABA.
Effect of Psychotropic Medications on Prolactin: Severity and Mechanism

<table>
<thead>
<tr>
<th>Drug Group</th>
<th>Drug Class</th>
<th>Effect on PRL</th>
<th>Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioids</td>
<td>Appal AP</td>
<td>—</td>
<td>PKA inhibition</td>
</tr>
<tr>
<td>Major Antidepressants</td>
<td>TCA</td>
<td>—</td>
<td>MAO inhibition</td>
</tr>
<tr>
<td>Major Neuroleptics</td>
<td>AP</td>
<td>—</td>
<td>D2/D4/5-HT, 5-HTR antagonism</td>
</tr>
<tr>
<td>Benzamides</td>
<td>AP</td>
<td>—</td>
<td>D2/D4/5-HT, 5-HTR antagonism</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>AP</td>
<td>—</td>
<td>D2/D4/5-HT, 5-HTR antagonism</td>
</tr>
<tr>
<td>Serotonin</td>
<td>Serotonin</td>
<td>—</td>
<td>Serotonin receptor inhibition</td>
</tr>
<tr>
<td>MAOIs</td>
<td>TCA</td>
<td>—</td>
<td>Serotonin receptor inhibition</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>SSRI</td>
<td>—</td>
<td>Serotonin receptor inhibition</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>SRI</td>
<td>—</td>
<td>Serotonin receptor inhibition</td>
</tr>
</tbody>
</table>

Hyperprolactinemia

- Elevated levels of prolactin, especially if prolonged, can cause some physical problems:

<table>
<thead>
<tr>
<th>Common Signs and Symptoms of Hyperprolactinemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>Gynecomastia</td>
</tr>
<tr>
<td>Erectile dysfunction</td>
</tr>
<tr>
<td>Vaginal dryness</td>
</tr>
<tr>
<td>Irregular menses (oligoamenorrhea and amenorrhea)</td>
</tr>
<tr>
<td>Vomiting</td>
</tr>
</tbody>
</table>

Hyperprolactinemia

- Elevated prolactin levels can cause decreased estrogen levels in females, lower testosterone levels in males.
- Lower sex hormone levels can cause decreased bone mineral density (BMD).
- Decreased BMD can lead to an increased risk of fractures. This can be exacerbated by certain lifestyle factors, such as smoking, physical inactivity, and poor nutrition (especially lower calcium and vitamin D intake.)
Extrapyramidal Symptoms (EPS)

• Extrapyramidal symptoms (EPS) are neurologic adverse effects of antipsychotic medications.
• All antipsychotic medications, including AAs, can cause EPS.
• The four possible, major EPS patterns seen are:
  – acute dystonia;
  – acute akathisia;
  – parkinsonism;
  – tardive dyskinesia.

Extrapyramidal Symptoms (EPS)

• In the previously cited Cohen article, odds ratios (OR) of developing EPS were calculated for the AAs (clozapine was not included in the study).
• All AAs (except quetiapine) significantly increased the risk of EPS compared with placebo.
Psychotropic Polypharmacy

- According to the National Library of Medicine-Medical Subject Headings, polypharmacy is defined as “the use of multiple drugs administered to the same patient, most commonly seen in elderly patients. It includes also the administration of excessive medication.”
- In recent years, polypharmacy has become more common, even in countries in which psychotropic prescribing has traditionally been conservative.
Psychotropic Polypharmacy

• Rates of polypharmacy differ, depending on how it’s defined.
• The National Association of State Mental Health Program Directors, in 2001, issued its “Technical Report on Psychiatric Polypharmacy,” in which it delineated five types of polypharmacy:
  1) Same-Class Polypharmacy: The use of more than one medication from the same medication class (e.g. two SSRIs, such as fluoxetine plus paroxetine).

Psychotropic Polypharmacy

• NASMHPD types of polypharmacy (cont.):
  2) Multi-Class Polypharmacy: The use of full therapeutic doses of more than one medication from different medication classes for the same symptom cluster (e.g. the use of lithium along with an atypical antipsychotic, such as fluoxetine plus olanzapine for treatment of mania).
  3) Adjunctive Polypharmacy: The use of one medication to treat the side effects or secondary symptoms of another medication from a different medication class (e.g. the use of trazodone, along with bupropion, for insomnia).

Psychotropic Polypharmacy

• NASMHPD types of polypharmacy (cont.):
  4) Augmentation: The use of one medication, at a lower than normal dose, along with another medication from a different medication class, at its full therapeutic dose, for the same symptom cluster (e.g. the addition of a low dose of haloperidol in a patient with a partial response to risperidone) or the addition of a medication that would not be used alone for the same symptom cluster (e.g. the addition of lithium in a person with major depression who is currently taking an antidepressant).
Psychotropic Polypharmacy

- NASMHPD types of polypharmacy (cont.):
  5) Total Polypharmacy: The total count of medications used in a patient, or total drug load. Consideration of total polypharmacy should include all prescription medications, over-the-counter medications, alternative medical therapies, and illicit pharmacological agents (e.g., marijuana).

Psychotropic Polypharmacy in IDDs

- In a 1999 study, Martin, et al, examined prescribing patterns in the treatment of higher-functioning pervasive developmental disorders (HFPDDs).
- Results showed that:
  - 55% were currently on a psychotropic drug;
  - 22.9% were on 2 psychotropic drugs;
  - 4.6% were on 3 psychotropic drugs;
  - 1.8% were on 4 psychotropic drugs;
  - 29.3% were on ≥ 2 psychotropic drugs.

Psychotropic Polypharmacy in IDDs

- Martin, et al (cont.):
- Antidepressants were the most commonly used agents (32.1%), followed by stimulants (20.2%) and neuroleptics (antipsychotics) (16.5%).
- The most common drugs, per category, were:
  - SSRIs: fluoxetine, sertraline and fluvoxamine;
  - Stimulants: methylphenidate and dextroamphetamine;
  - AAs: risperidone and olanzapine.
Psychotropic Polypharmacy in IDDs

- Spencer, et al (2013), examined rates and predictors of psychotropic use and multiclass polypharmacy (i.e., concurrent medication fills across ≥2 classes for at least 30 days) among commercially insured children with ASDs.
- Among 33,565 children with ASD, 35% had evidence of psychotropic polypharmacy (≥2 classes), and 15% used medications from ≥3 classes concurrently.

Psychotropic Polypharmacy in IDDs

- Spencer, et al (cont.): Among children with polypharmacy, the median length of polypharmacy was 346 days.
- Older children, those who had a psychiatrist visit, and those with evidence of co-occurring conditions (seizures, ADHD, anxiety, bipolar disorder, or depression) had higher odds of psychotropic use and/or polypharmacy.
Psychotropic Polypharmacy in IDDs

• Spencer, et al (cont.): Common combinations of classes were:
  – antidepressants and ADHD medications;
  – antipsychotics and ADHD medications;
  – antipsychotics and antidepressants; and,
  – all 3 (antipsychotics, antidepressants, and ADHD medications).

Psychotropic Polypharmacy in IDDs

• Freudenreich, et al (2012), have suggested that there are four broad etiological categories that can contribute to psychiatric polypharmacy (see the next slide):
Psychotropic Medications in IDDs: The Costly

Psychotropic Medications in IDDs: The Costly (Background)

- There are approximately 10.2 million people who are eligible for both Medicaid and Medicare and individuals with disabilities under the age of 65 comprise about 41% (4.1 million) of that number.
- About 7% of duals are individuals with IDDs (People who are dually eligible for Medicare and Medicaid frequently are referred to as “dual eligibles” or “duals.”)

Psychotropic Medications in IDDs: The Costly (Background)

- Duals represent 21% of Medicare beneficiaries and account for 36% of Medicare costs.
- Similarly, dual eligibles constitute 15% of Medicaid enrollees, but account for 39% of the program’s costs.
- Medicaid is the largest source of financing for disabilities services in the United States.

Source: The Arc (http://www.thearc.org)
Psychotropic Medications in IDDs: The Costly

- During FY 2008, combined federal-state MCD expenditures totaled $339 billion.
- Although people under age 65 enrolled on the basis of disability made up 15% of all MCD beneficiaries that year, they accounted for 42% of program expenditures, or $142 billion.
- In contrast, children and adults under 65 years of age without disabilities accounted for approximately 75% of MCD enrollees but only about one-third of program outlays.

MCD Enrollment and Spending by Eligibility Group, FY 2008

- This information was based on the most comprehensive data available (at the time) on a large sample of commercially insured children with special needs (chronic illnesses and/or disabilities).
Trends in Pharmacy Costs

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total costs in millions</td>
<td>$7.4</td>
<td>$8.9</td>
<td>$13.4</td>
</tr>
<tr>
<td>PMPM cost</td>
<td>$28</td>
<td>$34</td>
<td>$44</td>
</tr>
<tr>
<td>% Change from 1999</td>
<td>—</td>
<td>+8.5%</td>
<td>+37.1%</td>
</tr>
<tr>
<td>No. prescriptions per 1,000 children</td>
<td>9,291</td>
<td>9,697</td>
<td>16,043</td>
</tr>
<tr>
<td>% Change from 1999</td>
<td>—</td>
<td>+2.1%</td>
<td>+68.1%</td>
</tr>
</tbody>
</table>

Source: UnitedHealth Group

Distribution of PMPM* Costs Across Services, 2001

- Inpatient Care: 28%
- Primary Care Physicians: 9%
- Specialty Physicians: 10%
- Outpatient Care: 11%
- Other: 12%
- Prescription Drugs: 10%
- Lab and Radiology: 17%

Source: UnitedHealth Group

PMPM Costs (As a Percentage of Total Costs) For Selected Drug Categories, 2001

- General Therapeutic: 12%
- Central Nervous System/Psychiatric: 12%
- Dermatological: 2%
- Endocrine: 0%
- Anti-Infective: 1%
- Respiratory: 2%
- Other: 21%

Source: UnitedHealth Group
Psychotropic Medications in IDDs: The Costly


Most Frequently Used Behavioral Health Services among Children in MCD with DDs, 2005

Use of Psychotropic Medication among Children in MCD, by Psychiatric Diagnosis, 2005
Total Expenditures and Proportion of Behavioral Health Service Use among Children in MCD with DDs, by Service Type, 2005

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Total Expenditures</th>
<th>% Total Expenditures</th>
<th>% Users*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatric evaluation</td>
<td>$12,393,564</td>
<td>17.7%</td>
<td>17.6%</td>
</tr>
<tr>
<td>Psychotropic medication**</td>
<td>$96.4M</td>
<td>1.4%</td>
<td></td>
</tr>
<tr>
<td>Residential treatment/Therapeutic group homes</td>
<td>$8,501,667</td>
<td>12.4%</td>
<td>12.6%</td>
</tr>
<tr>
<td>Outpatient treatment/inpatient stay**</td>
<td>$6,141,175</td>
<td>9.0%</td>
<td>9.6%</td>
</tr>
<tr>
<td>Targeted case management</td>
<td>$37,198,936</td>
<td>5.6%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Biological/medical equipment</td>
<td>$25,713,253</td>
<td>3.8%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Substance use treatment</td>
<td>$35,797,702</td>
<td>5.3%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Case Management</td>
<td>$38,908,526</td>
<td>5.9%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Special hospitalization/intensive care</td>
<td>$34,103,904</td>
<td>5.0%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Behavioral management consultation and training</td>
<td>$25,715,258</td>
<td>3.8%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Speech therapy</td>
<td>$32,198,936</td>
<td>4.7%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Therapeutic foster care</td>
<td>$33,715,351</td>
<td>4.9%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Medication management</td>
<td>$56,013,096</td>
<td>8.3%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Screening/assessment/referral</td>
<td>$13,496,195</td>
<td>2.0%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Family therapy/family education and training</td>
<td>$22,683,122</td>
<td>3.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Other (e.g., needed because without)</td>
<td>$4,482,295</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

*N = 70,322. Percentages do not sum to 100% as a child may use multiple service types.
** $96.4M reflects psychotropic medication expenditures for children who used behavioral health services.

Behavioral Health Services Accounting for the Largest Proportion of Total Expenditures for MCD Children with DDs Using Behavioral Health Services, 2005*

Expenditures for Psychotropic Medication among Children in MCD with DDs, by Type of Health Care Used, 2005

<table>
<thead>
<tr>
<th>Type of Health Care</th>
<th>Children Receiving Psychotropic Medications (%)</th>
<th>Most Psychotropic Medication Expenditure</th>
<th>Total Psychotropic Medication Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral Health Services</td>
<td>40.8%</td>
<td>$3,570</td>
<td>$3,570</td>
</tr>
<tr>
<td>Interventional Services</td>
<td>5.4%</td>
<td>$1,468</td>
<td>$1,468</td>
</tr>
<tr>
<td>Physical Health Services - Total</td>
<td>6.2%</td>
<td>$3,837</td>
<td>$3,837</td>
</tr>
<tr>
<td>TOTAL</td>
<td>52.4%</td>
<td>$9,468</td>
<td>$9,468</td>
</tr>
</tbody>
</table>

*Cannot determine whether service was behavioral or physical.
### Expenditures for Psychotropic Medication Use among Children in MCD, by Psychiatric Diagnosis, 2005

<table>
<thead>
<tr>
<th>Psychotropic Medications</th>
<th>0%</th>
<th>ADHD</th>
<th>Mood</th>
<th>Anxiety</th>
<th>ODD</th>
<th>Autism</th>
<th>Other</th>
<th>None</th>
<th>Total Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antidepressants/ Mood Stabilizers</td>
<td>$1,200,000</td>
<td>$1,200,000</td>
<td>$1,200,000</td>
<td>$1,200,000</td>
<td>$1,200,000</td>
<td>$1,200,000</td>
<td>$1,200,000</td>
<td>$1,200,000</td>
<td>$1,200,000,000</td>
</tr>
<tr>
<td>Lithium</td>
<td>$3,000,000</td>
<td>$6,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000,000</td>
</tr>
<tr>
<td>Antidepressants/ Mood Stabilizers</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000,000</td>
</tr>
<tr>
<td>Mean Expenditures</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000</td>
<td>$3,000,000,000</td>
</tr>
</tbody>
</table>

### Conclusion

- Emotional and behavioral disorders are common in individuals with IDDs.
- Psychotropic medications are widely used in those with IDDs, despite limited research in this population.
- Individuals with IDDs, especially the young and the elderly, are at higher risk for experiencing adverse effects from psychotropic medications.
Conclusion (cont.)

• Whenever possible, non-pharmacologic interventions should be tried first.
• The best outcomes can be expected when psychotropic medications are used to treat specific conditions (e.g. depression) vs. non-specific conditions (e.g. aggression).
• Medications should be started at a low dose, and titrated slowly, aiming for the lowest effective dose.
• Polypharmacy should be avoided, if possible.

Selected Bibliography


Selected Bibliography

Selected Bibliography