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Antipsychotic drug side effects for persons with intellectual disability

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ABSTRACT

Antipsychotic drugs are the most frequently prescribed of the psychotropic drugs among the intellectually disabled (ID) population. Given their widespread use, efforts to systematically assess and report side effects are warranted. Specific scaling methods such as the *Matson Evaluation of Side Effects* (*MEDS*), the *Abnormal Inventory Movement Scale* (*AIMS*), and *Dyskinesia Identification System Condensed User Scale* (*DISCUS*) are reviewed. Symptom patterns and a focus on additional research are discussed. While progress has been made, more and more systematic methods to research these problems are necessary.

Persons with intellectual disability (ID) are particularly vulnerable to a wide range of psychopathology such as schizophrenia, bipolar disorder, and anxiety (Coe et al., 1999; LoVullo & Matson, 2009; Matson et al., 1999; Rose, Bramham, Young, Paliokostas, & Xenitidis, 2009). Challenging behaviors such as aggression and self-injury are also more likely where ID is present, and existence of comorbid psychopathology further exacerbates challenging behaviors (Embregts, Didden, Schreuder, Huitink, & Van Nieuwenhuijzen, 2009; Giarelli, Clarke, Catching, & Ratcliffe, 2009; Lang et al., 2009; Matson, Kiely, & Bamburg, 1997).

The existence of other disabilities such as co-occurring developmental disabilities of autism spectrum disorders or seizures is also much more likely to be seen in persons with ID (Dawson, Matson, & Cherry, 1998; Matson & Neal, 2009b; Matson, Dempsey, LoVullo, & Wilkins, 2008). All of these problems, which often overlap with ID put the individual at a particularly high risk for receiving one or more psychotropic medications. In fact, persons with ID tend to be the most overmedicated group in society (Matson & Boisjoli, 2009; Matson and Neal, 2009a). Additionally, health issues, lack of coping, deficits in cognitive processing skills, and other concerns can make treating this population particularly challenging (Brown et al., 2009; Cheung & Siu, 2009; Matson, Dempsey, & Fodstad, 2009; Matson, Rivet, Fodstad, Dempsey, & Boisjoli, 2009; Nieuwenhuis-Mark, 2009; Shih, Hsu, & Shih, 2009; Van der Molen, Van Luit, Jongmans, & Van der Molen, 2009). Psychotropic drugs, particularly antipsychotics, are considered an important treatment for many of these issues (deLeon, Greenlee, Barber, Sabaawi, & Singh, 2009).

Not only do persons with ID receive psychotropic medications at high rates, but these drugs tend to be prescribed for many years (Yen, Lin, Loh, Shih, & Hsu, 2009). A major risk factor of these prescription practices is the development of a host of side effects. The purpose of this review is to provide an overview of what we know with respect to the development of such side effects, and to point out areas for further research.

Psychotropic drug administration has been a commonly used intervention for persons with ID since these medications were introduced nearly half a century ago (Levitas & Hurley, 2006). Additionally, these persons with ID have been one of the most heavily medicated groups with these drugs. Problems such as aggression have been one of the most frequently treated problems in the ID population despite a limited database supporting efficacy for this purpose (Africano-Oliver et al., 2010;

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Deb & Unwin, 2007). Thus, pharmacological treatment for aggression is controversial in this population and polypharmacy is common (Aman & Madrid, 1999; Kiernan, Reeves, & Alborz, 1995; McGillivray & McCabe, 2004). Using these medications for more conventional purposes such as Schizophrenia or depression are much better accepted (Deb, Chaplin, Sohanpal, Unwin, Soni, & Leontre, 2008; Kwok & Cheung, 2007). This issue is also important given that rates of mental illness that are diagnosed will double by 2020 (Taggart, McMillan, & Lawson, 2008). It is also the case that some types of mental health disorders are diagnosed less frequently in persons with ID such as anxiety and depression, while others are diagnosed more frequently, such as psychosis and autism (Davis, Saeed, & Antonacci, 2008). All of these factors affect rates of drug use and in turn side effects. Efforts to decrease rates of drug use are also a common theme in the research literature (Howerton et al., 2002).

Side effects may be short or long term. Furthermore, persons with ID may be more susceptible to psychotropic side effects when compared to the general population (Arnold, 1993). Some side effects include physical complications such as dry mouth, weight gain, sedation, constipation, and dizziness. More serious long term changes conversely involve neurological and physiological damage (Handen & Gilchrist, 2006; Pary, 1994; Valdovinos, Parsa, & Alexander, 2009). The neurological symptoms may on the whole be the most difficult to identify. This situation exists since high doses of antipsychotics, which are the primary causes of these side effects, can also mask their symptoms, at least to some extent. Additionally, many of these neurological symptoms present as abnormal movements which may be mistaken for core symptoms of ID or autism (Barnhill & Hurley, 2009). Among these, which are considered the most problematic of all side effects, are parkinsonian symptoms, tardive dyskinesia, dystonia, and akathisia (Jenkins, 2000).

A rapid shift in the last decade occurred from the older antipsychotic drugs, referred to as typical antipsychotics, to the newer antipsychotic drugs, called atypical antipsychotics. The chief rationale for using the newer drugs in this class is that they have a lower likelihood of producing extrapyramidal side effects (EPS) (Correia & Vincente, 2007). This is no small issue since these are the most frequently prescribed drugs in persons with ID. However, more recent research has demonstrated a growing level of support for alternative behaviorally based treatments and a reduction in levels of medication (Fleming, Caine, Ahmet, & Smith, 1996; Mansell, 1994; Matson, Bamburg, Mayville, Pinkston, et al., 2000; Matson, Bielecki, Mayville, & Matson, 2003; Pyles, Muniz, Cade, & Silva, 1997). This change in thinking is in no small part due to the serious, although somewhat different, side effect profiles for the newer antipsychotic drugs. Weight gain and metabolic changes have been recently reported and are concerning (Correll, Manu, Olshanskiy, Napolitano, Kane, & Malhorta, 2009; Varley & McClellan, 2009).

1. Measurement methods

A number of assessment scales have been designed to evaluate the psychotropic side effects for persons with ID or have been modified for use with this group. The primary measures are the *Abnormal Involuntary Movement Scale* (*AIMS*) (Guy, 1976), the *Dyskinesia Identification System Condensed User Scale* (*DISCUS*) (Bostrom & Walker, 1990; Granger, Yurkunski, Miller, Swanson, & Crinella, 1987; Kalachnik & Sprague, 1993; Sprague, Korach, vanEmmerick, & Newell, 1993), and the *Matson Evaluation of the Drug Side Effects* (*MEDS*) (Matson, Mayville, Bielecki, Barnes, Bamburg, & Baglio, 1998; Matson, Mayville, Bamburg, & Eckholdt, 2001; Matson, Fodstad, & Rivet, 2008). All of these scales have been studied in some detail and are discussed further in the next section of this paper.

Other scales have also been developed but have not been studied beyond initial publication. The *CLAMPS* is one of these scales and was designed to evaluate movement disorders, including tardive dyskinesia in the ID population (Ellis, Carmancio, Ricketts, Chambers, Singh, & Singh, 1996). Another of these scales is the *Monitoring of Side Effects Scale* (*MOSES*) (Kalachnik, 1999). The *MOSES* is divided into the assessment of: (1) ears/eyes/head; (2) mouth; (3) nose/throat/chest; (4) gastrointestinal; (5) musculoskeletal/neurological; (6) skin, urinary/genital; and (7) psychological. This scale has been described as a "comprehensive" measure of side effects caused by psychotropic medications (Pary & Hurley, 2006). One scale specific to akathesia is the *Barnes Akathesia Rating Scale-Revised* (Barnes, 1989, 2003).

2. Side effect studies

2.1. Tardive dyskinesia (TD)

The most frequently researched of the psychotropic drug side effects is TD. The disorder was first described and labeled by Uhrbrand and Faurbye (1960). It is a syndrome constituted by involuntary movements that are produced by long term use of antipsychotic drugs, and 20–40% of people are medicated with this drug class (Marsden & Jenner, 1980). Researchers and clinicians have historically been slow to recognize and treat these TD symptoms. For example, since the introduction of resperdine in the 1930s there have been serious concerns about side effects of behavior modifying drugs (Turek, Kurland, Hanlon, & Bohm, 1972). Furthermore, extrapyramidal symptoms from chlorpromazine withdrawal were reported as early as 1956 (Ey, Faure, & Rappard, 1956) and were reaffirmed in controlled research by the early 1970s (Turek et al., 1972). Additionally, systematic studies of increased TD with antipsychotic drug withdrawal have been reported for some time using the *AIMS* rating scale (Gualtieri, Schroeder, Hicks, & Quade 1986).

Rao, Cowie, and Mathew (1987) also found higher rates of TD for 67 adults with ID who were taking antipsychotics versus persons not on these drugs using the *AIMS*. These authors also found that cumulative neuroleptic medication was also a significant predictor of TD. Cohen, Khan, Zheng, and Chiles (1991) have also used the *AIMS* to evaluate antipsychotic drug