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Integration of Pharmacotherapy and Functional Analysis

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Rinck (1998) reported that between 12 and 43% of persons with mental retardation take psychotropic medications. These medications are used for a wide range of psychiatric and behavioral problems. Behavioral procedures are also often used both formally and in an informal way. Federal and many state and local rules require the integration of psychotropic medication with other forms of interventions. The most common form of adjunctive intervention is behavior programming, both in community and institutional settings. There are also many persons with mental retardation who show challenging behaviors who do not have a psychiatric diagnosis whose challenging behaviors appear to be primarily learned behaviors. There are also some challenging behaviors that can lead to a psychiatric diagnosis, such as Pica, Rumination Disorder, or Personality Disorders that do not respond to psychotropic medications. Finally, some persons with a psychiatric disorder may also show non-specific behavioral problems, such as aggression, self-injury, property destruction and non-compliance. Sometimes these non-specific behavior disorders are closely related to a psychiatric disorder, but often they are only in part related to psychiatric disorders. Thus, psychotropic medications and behavior programming are two of the most commonly used forms of interventions for challenging behaviors.

There are circumstances when psychotropic medications may be effective, safe and appropriate. However, their use remains controversial. Diagnoses may be unreliable or inaccurate, Medications are sometimes used in place of programming. Negative side effects may seriously impair the daily functioning of the consumer. The use of psychotropic medication may not be integrated with other methods of managing behavior disorders. Finally, there are relatively few scientific studies of the use of psychotropic medications with person with developmental disabilities that are methodologically sound.

In persons with borderline through moderate mental retardation and who are verbal psychotropic medications are indicated when the following conditions are met:

- (a) the person has a clear DSM-IV psychiatric diagnosis, or drug-responsive target symptom; and,
- (b) the medication(s) corresponds to the diagnosis; and,

- (c) the person benefits substantially from the medication; and,
- (d) alternative interventions are not indicated, or when appropriate, alternative therapies have been faithfully implemented and failed; and,
- (e) when there are few negative side-effects of psychotropic medications; and,
- (f) when there are no credible alternative forms of intervention that are safer or as safe as psychotropic medications.

In persons who have severe through profound mental retardation and who are predominantly or completely non-verbal the use of psychotropic medications is indicated when the following conditions are met:

- (a) there is a clearly stated and well-substantiated diagnostic hypothesis; and,
- (b) the medications correspond to this hypothesis; and,
- (c) the person benefits substantially from the medications; and,
- (d) there are no credible, alternative interventions, or, when there are they have been implemented faithfully and failed; and,
- (e) there are no significant negative side effects of the psychotropic medications.

The use of psychotropic medication is controversial when:

- (a) the person has severe through profound mental retardation and DSM-IV diagnostic criteria can not be used unmodified (Sturmev, 1993); or,
- (b) the medication is used for non-specific behaviors that do not correspond to any psychiatric diagnosis, such as stripping, non-compliance; or,
- (c) the medication is used for non-specific, diagnostically heterogeneous behaviors, such as aggression, self-injury, withdrawal, that may be related to several diagnostic categories and there is no supporting evidence to clearly establish a credible diagnosis; or,
- (d) the diagnosis is valid, but no very effective intervention is indicated, such as pica, or encopresis; or,
- (e) the medication(s) does not corresponds to the diagnosis, and / or the persons has multiple medications from different classes of medications, and / or the person has multiple diagnoses; or,
- (f) the presenting information necessary for diagnosis is incomplete or unavailable; or,
- (g) the person does not benefit substantially from the medication; or,

(h) alternative interventions are indicated, have not been implemented or have been implemented incorrectly; or,

(i) there are negative side effects.

Interventions based on functional analysis can be highly effective to address both maladaptive behaviors and psychiatric disorders in persons with mental retardation, both in conjunction with psychotropic medication and in combination with psychotropic medication (Didden et al., 1997; Iwata et al. 1994; Sturmey, 1998). However, behavioral interventions, like psychotropic medications can also be highly controversial. Behavioral interventions are not controversial when:

(a) behavioral interventions involve typical life experiences, teach skills, and enhance the image of the consumer; and,

(b) the consumer benefits substantially from the procedure; and,

(c) the procedures are low effort and easy to conduct; and,

(d) there are positive side-effects, such as smiling or emergence of new skills, and,

(e) they are liked by the consumer and significant others, and

(f) They are based primarily on reinforcement; and,

(g) based on a functional analysis.

Behavioral interventions are controversial when:

(a) they are stigmatizing and involve unusual procedures; or

(b) they are not effective; or

(c) they are complex or effortful to implement; or,

(d) There are negative side effects, such as avoidance of the program or new maladaptive behaviors emerge; or

(f) the procedures are disliked by consumer, staff or family members; or

(g) they include punishment procedures; or,

(h) are technique-driven, rather than based on a functional analysis.

This paper explores some of the issues in integrating pharmacotherapy and behavioral interventions based on functional analysis.

Kinds of Integration

Behavior analysis and psychotropic medications can be integrated in a number of ways. In this section I describe some of the ways they can be integrated.

Data Collection

Behavior analysis can complement the use of psychotropic medications by the collection of observation data. Global impressions and clinical rating scales can be quick, but are often vague and subject to halo effects and unreliability. Direct observation of behavior and frequency counts of target behaviors can be much more precise and reliable. Using behavioral data to evaluate psychotropic medication can also force clinicians to clarify just which observable behaviors are thought to correspond to the diagnosis and how the consumer should benefit from their medication. Observational data may be used to collect baseline data prior to the initiation of a new medication, prior to dose adjustments, prior to medication tapers, or prior to switching medications. Observational data can also be used to test diagnostic hypotheses, for example to see if mood and self-injury are really closely related. Observational data can also be used to conduct functional analysis to develop alternative, behavioral explanations of presenting maladaptive behaviors, or to evaluate behavioral overlays of bona fide psychiatric symptoms.

Behavior Analysis and Diagnosis

In cases where the person presents with non-specific behavior problems or problems that are not drug responsive, behavior analysis can be used as part of an evaluation to determine if the observed maladaptive behaviors are better viewed as functional, learned behaviors. If there are clear environmental triggers or consequences of the target behaviors treatment teams may be more likely to focus on the person's environment, rather than hope that some unobservable internal state or illness can be fixed by a medication.

Selection of 'primary' and 'secondary' Therapies

Some diagnostic categories may be primarily responsive to psychotropic medication, at least in their acute phase. For example, the positive symptoms of schizophrenia and other psychotic disorders respond well to neuroleptics and atypical anti-psychotics. The negative symptoms of schizophrenia may respond to some atypical anti-psychotic medications. However, the social and vocational adjustment of many people whose positive and negative symptom respond well to medication is often continues to be poor, even after these symptoms have been significantly reduced in frequency or intensity. Behavioral interventions may be the treatment of choice to teach coping, vocational, life and social skills that are key to long-term adjustment to chronic mental illness.

Psychotropic medication may sometime^s be used secondary to a behavioral intervention. Examples here might include the short-term use of psychotropic medication to help with acute crisis, transient sleep disturbance while there is an ongoing behavioral intervention.

How Psychotropic Medications Interact with Behavioral Procedures

Psychotropic medications can increase or decrease the power of a stimulus as a reinforcer or punisher. For example a medication that sedates increase the power of sleep, and behaviors that access sleep, as a reinforcers. Sedating medications also establish compliance and work as other effortful behaviors as punishers. This also establishes those behaviors that avoid these tasks as negatively reinforcing. Psychotropic medications can also establish certain behaviors as highly reinforcing or punishing. For example, akathisia, a common side-effect of neuroleptics, established walking and pacing as preferred, reinforcing activities. Conversely, sitting down for prolonged periods of time would become highly punishing. Lithium can establish water or drinking as highly reinforcing because of the negative side effect of dry mouth. As other adaptive and maladaptive behaviors that get access to the new and powerful reinforcer of water are recruited new target behaviors such as non-compliance with work, because it involves sitting down, might emerge. Northup et al. (1997) demonstrated that methylphenidate established and disestablished reinforcers in children with Attention Distraction Hyperactivity Disorder in a highly idiosyncratic manner.

Interactions of Psychotropic Medications Effects with Learning History Effects.

Drug effects are greatest when behavior is under weak stimulus control and weakest when behavior is under strong stimulus control. Byrne, LeSage and Poling (1997) reported a study in which rats were taught to press two manipulanda. They were reinforced after 8 to 12 presses on the left manipulandum if they then pressed the right manipulandum. One group were under greater stimulus control in that when they pressed the 8 th. time the right key light to cue the availability of reinforcement. The two groups of rats were then administered chlorpromazine. The effects of chlorpromazine were significantly less in the group under strong stimulus control than the other group. One of the clinical implications of this is that when the consumer has a strong learning history - for example, goes to work, works hard, and has a fixed routine with high density of reinforcement or punishment that is predictable - then drug effects will be minimized. This might be seen when tapering psychotropic medications. We could speculate that relapses are less likely if the person's behavior is under strong stimulus control.

Rule Governed Behavior Effects

The effects of drugs are strongly effected by how we label the drugs, our learning history, ~~X~~ And the effects of modeling from peers. The effects of many recreational drugs, including marijuana, alcohol, cocaine and marijuana, are strongly influenced by modeling and information from peers as to their effects. Rule governed behavior is mediated by language and thus will primarily be seen in person with borderline through moderate mental retardation. The effects of rule governed behavior might be seen when PRN medications are administered, during recreational drug use, and possibly with psychotropic medications. So far there has been little or no research in this area with people with mental retardation.

Negative Interactions Between Psychotropic Medications and Behavioral Interventions

Certain classes of drugs may impair learning and thus reduce the efficacy of behavior therapy. Neuroleptics may inhibit learning in persons with mental retardation, both through sedation and through reducing the motivating value of stimuli as reinforcers. Behavior programs may also

inhibit the effects of psychotropic medications. For example, ineffective behavior programs or negative side effects of behavior programs might reduce medication compliance, or inadvertently reinforce target symptoms.

Psychotropic Medications May Facilitate Behavioral Interventions

Psychotropic medications may facilitate behavior programming. For example, antidepressants may increase the range of reinforcers and behaviors available to work with as part of a behavior program. Another example, is that antipsychotics may effectively reduce psychotic symptoms that allow behavioral procedures to address psychosocial functioning and adaptation.

Summary

Psychotropic medications and behavioral procedures are two of the most commonly used interventions to reduce psychiatric symptoms and behavior disorders in persons with developmental disabilities. Rather than seeing them as alternate forms of intervention researchers and clinicians should begin to work towards how these two methods of intervention can be integrated into comprehensive treatment plans.

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