
Chapter 8

Psychopharmacological Treatments in Persons with Developmental Disabilities (DD)

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Learning Objectives

Readers will be able to:

1. Identify the categories of psychotropic medications
2. Learn how to use psychotropic medications in order to minimize their side effects
3. Identify an appropriate monitoring system to determine the effect of the medication
4. Learn the protocols on how to use PRN medications:
 - The reason for PRN medication
 - Know at what stage of behaviour it should be used
5. Learn what staff need to know about the psychotropic medications being prescribed:
 - Why the medication is being prescribed
 - How long before it becomes effective
 - Under what conditions the medication should be stopped
 - How long it is necessary to take the medication
 - The adverse effects of the medication

Introduction

Try to recollect how frequent the use of medications is in clients with developmental disabilities. Can you understand the multiple uses of these medications? Have you ever wondered what they are for? Professionals and caregivers dealing with persons with developmental disabilities, frequently have tried to use pharmacological treatments (prescribed medications) to treat:

- mental health disorders (i.e., anxiety, depression, schizophrenia) and
- prevent negative cycles from occurring, such as in Bipolar mental illness.

These medications have also been used to manage :

- maladaptive behaviours whilst definitive and active treatment is taking place and
- extreme anxiety when rehabilitative intervention is not available or practical.

In many instances, different types of medications are used in an attempt to improve outcome, and to enable the person with a developmental disability and mental disorder to lead a productive and peaceful life.

However, the state of our medical knowledge on medication uses, although better than it has been, is still crude, and in many cases imprecise. During the past ten years, our knowledge in assessing, diagnosing and treating persons with mental health problems has improved tenfold. Despite this immense expansion of our database, there are situations where the use of

medication is not the optimal, or the combinations used (polypharmacy) are less effective, or even detrimental.

In this chapter, an attempt has been made to:

1. Present the various medication categories mostly used in persons with a dual diagnosis.
2. Discuss possible side effects and how you evaluate them in this group.
3. Create efficient strategies of assessing the needs for medication use and the different ways of prescribing them (i.e., continuously; on a per needed basis; in crisis/emergency care).

What are psychotropic medications?

Psychotropic medications include any prescribed drugs that are given to stabilize or improve mood, mental status or behaviour. The following categories of medications are commonly used in persons with developmental disabilities:

- Antidepressants
- Antianxiety medications
- Sedative/hypnotics
- Mood stabilizers
- Antipsychotic agents
- Stimulants

How to use psychotropic medications in order to minimize their adverse effects

Individuals with DD have risks similar to the general population with respect to developing the same spectrum of side ef-

fects from psychotropic drugs. However, there are a few situations in which these drugs seem to cause adverse effects that are specific to this population, such as epileptic attacks. Moreover, individualized response to the medications' effects is probably higher in people with DD. Thus, their adverse effects may be more unexpected. Presently, for the majority of psychotropic drugs, it is difficult to predict, based on scientific evidence, which patients are at risk of experiencing clinically significant side effects.

Nevertheless, people with DD may have side effects which may go undetected due to three main factors:

- The patient's functional handicap may mask some signs of medication toxicity.
- The individual may experience difficulty in informing caregivers regarding adverse effects. On one hand, people with a lesser degree of impairment may have the ability to report problems, but they may not be able to understand or appreciate adverse effects as being secondary to medication. On the other hand, patients with more serious difficulties may be unable to report adverse effects due to speech or language impairments. For these people, adverse reactions may manifest as behavioural changes, such as increased aggression or self-injurious activity.
- Stereotypic behaviours, which are common in people with DD, may make the recognition of adverse effects very challenging. Differentiating between these behaviours and drug-induced abnormal movements may be difficult. In addition, it is problematic to distinguish between the adverse effects of some psychotropic medications, and comorbid psychiatric or medical conditions (Sovner & Des Noyers Hurley, 1985; Pary, 1993).

It is best to start at low dose when initiating pharmacological treatment, in situations where there is no psychiatric emergency and slowly titrate the dose to the lowest optimally effective dose to achieve therapeutic effect. By implementing this approach, the likelihood of experiencing adverse effects may be significantly diminished. Furthermore, it is advisable to avoid frequent medication dose changes in response to the identified target behaviours, which may vary on an ongoing basis. Administration of medication at certain daytime events, such as breakfast or before bedtime, is a good strategy, geared towards promoting compliance with medications used. In addition, use of multiple concomitant medications may significantly contribute to patient's problems with compliance and side effects. Thus, it is advisable to minimize them or avoid them if possible (Bergman, 1996; Santosh & Baird, 1999).

Rapid discontinuation of most psychotropic drugs may lead to withdrawal reactions. Generally speaking, these medications should be gradually tapered off. In addition, people with DD may be more susceptible to developing withdrawal symptoms secondary to rapid discontinuation of psychotropic medication. However, frequent monitoring during tapering will minimize the occurrence of withdrawal symptoms. Furthermore, patients with DD may present with behavioural changes due to withdrawal symptoms. In some cases, it may be challenging to distinguish between decrease suppression of maladaptive behaviours or frank symptoms of mental illness or a combination of the two. However, in these cases, giving an immediate dose of the medication being withdrawn may lead to relief of withdrawal symptoms, but with a lack of substantial improvement of the relapse of behavioural problems. In these circumstances, restarting of the last dose of medication, and a more gradual decrease of dosage may facilitate successful discontinuation of

the medication (Madrid, State, & King, 2000; Sovner & DesNoyers Hurley 1985).

Table 1- Physical checkup prior to the use of Psychopharmacological agents in Persons with Developmental Disability

Category	Class	Checkup
Benzodiazepines	Antianxiety	Complete blood count, blood chemistries with attention to liver function tests
Tricyclics	Antidepressants	Blood chemistries, electrocardiogram
SSRIs	Antidepressants	Blood chemistries, electrocardiogram
Typical/Atypical Neuroleptics	Antipsychotics	Blood chemistries, electrocardiogram
Anticonvulsants	Mood stabilizers	Complete blood count, platelet count, blood chemistries with attention to liver function
Lithium	Mood stabilizer; anti mania	Thyroid test, blood chemistries, electrocardiogram
Propranolol	Antihyperactive Antianxiety	Blood pressure, pulse, electrocardiogram, blood chemistries

Note: When pharmacological intervention is established, regular 3-6 months monitoring of the same functions is necessary.

Drug monitoring inactive treatment and or management is necessary for medications such as mood stabilizers but not so helpful in antianxiety medications, SSRI's and antipsychotics excluding Clozapine.

How to evaluate for adverse effects

It is important to keep in mind the following strongly advised guidelines:

- Baseline physical assessment and laboratory screening should occur prior to initiation of medication.
- Baseline behavioural assessment is important *prior* to initiating drug therapy. Target behaviours, signs or symptoms, and quality of life parameters must be defined and quantified. Quantification should be based on empirical measurement methods (e.g., frequency count, duration recording, rating scales, time sample, interval recording). Data should be collected over two to four weeks prior to initiating non-emergency medication, and also after the initiation of any psychotropic medication, especially before and after any dose or drug change.
- Anticipate side effects; an increase in behavioural problems may reflect the adverse effects of a medication.
- Follow-up assessments and laboratory monitoring at regular intervals (during the initial phase weekly and at least once every three to six months in maintenance).
- Patient, parents and caregivers should be informed about the potential side effects of the medication and instructed to report immediately any change in behaviour.
- Use open-ended questions when screening for side effects.
- Use rating scales.

There are three different types of rating scales used to detect adverse drug reactions: medication-specific, general purpose, and side effect-specific. However, standardized, user-friendly rating scales for monitoring drug-induced side effects are still needed (Reiss & Aman, 1998).

Medication-specific scales are based on the most frequently occurring symptoms described in the Physicians' Desk Reference. They lose their utility when polypharmacy is employed. General-purpose rating scales provide an in-depth review of all body parts, and contrary to medication-specific scales, can be used in patients who take multiple medications.

Side effect-specific scales were developed to evaluate the acute and chronic extrapyramidal symptoms secondary to most antipsychotics. Examples include:

- Abnormal Involuntary Movement Scale (AIMS) (Guy, 1976) is the most widely recognized and utilized rating scale for routine screening and early detection of tardive dyskinesia. However, this scale is unable to detect tardive dystonias or tardive akathisia.
- Extrapyramidal Symptom Rating Scale (ESRS) (Chouinard, Ross-Chouinard, Annable, & Jones, 1980) is monitoring for the presence or absence of acute and chronic extrapyramidal side effects (EPSE). On the downside, this scale does not register the severity of symptoms.

Protocols and Guidelines on how to use PRN Medications

Medications are prescribed to be taken in a certain way (See Table 2). At other times, medications are prescribed to be taken as required (PRN). PRN medications are best used as

follows:

Table 2: Abbreviations for Medication and PRN Orders

od	to be given once a day
bid	to be given twice a day (usually at 9 a.m. and 6 p.m.)
tid	to be given three times a day (usually at 9 a.m., 1 p.m., and 6 p.m.)
qid	to be given four times a day (usually at 9 a.m., 1 p.m., 6 p.m., and 10 p.m.)
hs	to be given at bedtime
qh	to be given every hour
qH	to be given every 2 hours
q4H	to be given every 4 hours
a.c.	to be given prior to meals (usually 1 hour before meals)
p.c.	to be given 1 hour after meals
tid a.c.	to be given three times a day, prior to meals
tid p.c.	to be given three times a day, after meals

Note: Medications given regularly during the day could be given at times which are adjusted to accommodate an individual's schedule.

PRN medications:

PRN	to be given when required
PRN bid	can be given up to twice a day
PRN tid	can be given up to three times a day
PRN q3h	can be given every 3 hours
PRN q3h tid	can be given every three hours up to three times a day

- Management of extreme anxiety when rehabilitative intervention is not available or practical. For example when a person requires urgent medical attention and is not capable of allowing the medical examination and or treatment to occur. A distinction can be made when a person requires a preplanned intrusive intervention such as a visit to the dentist. In this case a rehabilitative approach can be more appropriate if practical. In situation when this is not available or practical PRN medication can be used.
- Management of an individual's maladaptive behaviours while definitive and active treatment of a specific mental disorder is taking place.

The categories of medications used as management strategies in such crises are primarily:

- Antianxiety medications/Benzodiazepines. (Please refer to the text)
- Antipsychotic medications. (Please refer to the text)
- Sleep inducing medications. (Please refer to text)

Other medication groups have occasionally been used to prevent a crisis, but to a much lesser extent, and their usefulness is far more limited. Examples include SSRIs and Beta-Blockers.

What we want to achieve when we use medications in crises:

- Primarily and preferably to prevent the crisis from occurring.
- To settle already existing escalation of behaviours.
- Minimize damage to self/others and/or property.

- Maintain a less disturbing environment for the wellness and stability of the other clients.

These medications are usually prescribed by psychiatrists, family physicians, dentists, anesthetists, and other relevant disciplines. It has been commonly accepted that environmental, medical and social changes can lead to crises. In any crisis, if time allows, the caregivers have to make an attempt to disentangle the reasons and causes for the crisis. In certain situations, however, the escalation of behaviour is so fast and so unpredictable, or it is so extreme in severity, that analysis of causes becomes impossible. In these instances, the clear guidelines and use of PRN protocols are very useful so that any staff/caregiver, familiar or unfamiliar with the person in crisis can respond adequately and appropriately to resolve the problematic situation.

An attempt is made to present the reader with certain examples of protocols/guidelines in order to facilitate an appropriate and speedier response in these very traumatic and traumatizing situations.

The Case of John

This case describes individual signs of agitation that can lead to major crisis.

John is a 40 year-old male who is diagnosed with developmental disability and Bipolar illness. John lives in a high support group home, and is treated with a mood stabilizer in titration.

During the titration process John remains excessively overactive and over reactive to environmental stimuli. In this process John's behaviour can escalate to becoming extremely physically and verbally abusive to himself and others. PRN medication is used in order to safeguard John and others

The protocols/guidelines for John are as follows:

Name: John J.

Date: 2/4/2002

Psychiatrist/Family Physician: Dr. M. Peterson

Medication: Haloperidol 0.5 mg PRN up to 3 mg per 24 hrs

Descriptions of Behaviours:

Mild Anxiety: Signs of tension occur when John bites his lip, pinches his arm, scratches excessively, or paces and bangs his head. Try to divert John's attention and lead him to a quiet area. Allow 15 minutes for John to settle. If this fails, then PRN medication is administered.

Severe Anxiety/Agitation: Signs of severe anxiety include: yelling, threatening staff or clients, obsessing, muttering under his breath. PRN medication is administered immediately.

Aggression: Procedure to be followed:

Quiet time, restraint if necessary, PRN as soon as it is possible

Behaviour/Timeout/Mat restraint Guidelines.

PRN medication should be given when John is able to

receive it.

Dosages:

- For mild Anxiety: Haloperidol 0.5 mg stat to be repeated within 45 minutes if necessary.
- For Severe Anxiety/Agitation: Haloperidol 1 mg to be repeated within 30 minutes if necessary.
- For Aggression: Haloperidol 1mg to be repeated if necessary every 30 minutes up to 3 mg.

Note: Any of the above combinations must not exceed 3 mg per 24 hours.

The Case of David

This case presents David, a 47 year old male, who is developmentally disabled and experiences recurrent depressive disorder. Four years prior David was treated successfully and medication was withdrawn. David did well for several years. However, in the past several months he has recurrent symptoms of his depressive condition. Whilst his antidepressant medication is being titrated and to insure David's safety PRN medication is being used .

In addition to his regular medication, David is given occasionally PRN medication to prevent behavioral escalation.

The protocol/PRN guidelines for David are as follows:

Name: David L.

Date: 6/5/2002

Psychiatrist/Family Physician: Dr. M. Peterson

Medication: Lorazepam 1 mg , 3 mg/24 hours.

Description of Behaviours:

David's signs of severe anxiety are banging head, yelling, pacing, whining noises, and frequent visits to the washroom.

The following steps should be taken prior to the administration of this medication:

1. Establish verbal communication, and suggest that David try to relax. Allow him time and a quiet area to do so. Allow 15-20 minutes time lapse. If David relaxes, please praise him.
2. If above fails, then administer medication.
3. Continue to encourage him to relax. Repeat PRN administration if the behaviours continue over 30 minutes. Do not exceed recommended maximum.

Note: All PRN administrations must be documented and accompanied by a behaviour report.

The Case of George

This case presents George, a 35 year old male with Down Syndrome, who experiences generalized anxiety disorder. Despite adequate trial of anti-anxiety medication, George continues to manifest interrupted sleep as well as rapid changes in mood state with periods of both excessive smiling and crying. Whilst the team is awaiting to have George reassessed PRN medication is used to prevent self injury or injury of others. .

The protocols/guidelines for George are as follows:

Name: George T.

Date: 5/4/2002

Psychiatrist/Family Physician: Dr. M. Peterson

Medication: Risperidone 0.5 mg

Maximum Dosage: 2 mg/24 hours

Description of Behaviours:

1. Inability to relax
2. Intense staring
3. Loud and repeated screaming
4. Physical aggression against another person or property

The following steps should be taken prior to the administration of medication:

1. Ask George to relax. Allow him time and a quiet area to relax.
2. If this fails, try to redirect him to a quiet area.
3. If he chooses to stay in this area, allow sufficient time to relax.
4. If behaviours continue for more than 20 minutes, or are severe and intense in nature, then administer PRN.

Note: All PRN medication must be accompanied by a behaviour report.

As is evident, PRN protocols/guidelines are very important so that:

- medication is used to assist in the management of maladaptive behaviours which cannot otherwise be managed safely
- staff/caregivers that are unfamiliar with the person concerned are still able to manage acute behaviour without jeopardizing anyone's health or safety.
- maximum amounts used per 24 hours are always a must in order to prevent unwanted side effects or prolonged periods of sedation of the individual client.

It is our hope that the outlined guidelines, as well as the case scenarios, will assist the reader to maximize effectiveness of the PRN medication with minimal risk to health and safety of the individual client and his/her environment.

Description of Psychotropic Medications

A. Antidepressants

Why the medication is being prescribed?

Management of psychiatric states such as:

- Major Depression and other depressive disorders
SSRI's
- Anxiety Disorders
SSRI's
- Body Dysmorphic Disorder and Trichotillomania
May respond to SSRIs
- Eating Disorders
High doses of SSRIs are effective in reducing bingeing and purging behaviours.
- Smoking cessation
Bupropion (Zyban) has been shown to be effective in smoking cessation when used as a component of an overall therapeutic program.
- Functional Enuresis
Often is treated with Imipramine.
- These states influence occurrence and severity of behaviours, such as aggression, impulsive behaviour, self-injurious behaviour and possibly stereotypy.

How long before antidepressants become effective?

Antidepressants are used for treatment of major depression and other depressive disorders. Over 50% of depressed patients will fully recover when an appropriate amount of any antidepressant is used for at least 6 weeks; whereas, 10-15% will ex-

perience some improvement and 20-30% will not improve significantly.

How long is it necessary to take the medication?

SSRIs have a better side effect profile than do other antidepressants. Therefore, they are usually used as the first line of treatment. If there is no improvement after four weeks of the initial dosage, three weeks on a higher dosage should be attempted. If no improvement is noted, the diagnosis of depression needs to be re-evaluated. Then, in case the diagnosis is reconfirmed, other antidepressants should be tried, such as Manerix, Trazodone, and Venlafaxine.

After a first episode of major depression, treatment is recommended for at least 6 months with an antidepressant at the therapeutic dose to which the patient showed response. Thereafter, the antidepressant should be gradually reduced to diminish the risk of relapse, or the discontinuation syndrome.

What are the classes of antidepressants?

1. Selective Serotonin Reuptake Inhibitors (SSRI)

As persons with developmental disability have lower seizure threshold, caution should be exercised at the speed of titration of the anti-depressant medication used. Caution should be also exercised when a long acting anti-depressant medication is used such as Fluoxetine in case the diagnosis is incorrect as the adverse effects will be felt for longer periods of time.

Table 3– SSRIs and Recommended Doses

Generic Name	Brand Name	Initial Dose (mg/d)	Maintenance Dose (mg/d)
Fluoxetine	Prozac	20 od	20-40
Fluvoxamine	Luvox	50 od	50-300
Paroxetine	Paxil	20 od	20-50
Sertraline	Zoloft	50 od	50-200
Citalopram	Celexa	20 od	20-40

*These are guidelines. Doses may vary on individual basis.

What are the SSRIs' adverse effects?

- Nausea, reduced appetite, vomiting, diarrhea, and gastrointestinal discomfort. These side effects may be dose limiting, or require therapy changes during treatment with SSRIs. It is possible to minimize these side effects by administering the medication with or after meals.
- SSRIs (especially Fluoxetine) may lead to agitation and restlessness at the start of the treatment. SSRIs occasionally may cause akathisia (sudden onset of inner restlessness, irritability, increased energy and insomnia), lasting from a few hours to a day; lowering the initial dose may be beneficial for the patient.
- When agitation associated with SSRIs causes sleep disturbance, many clinicians add Trazodone (Desyrel), a sedating anti-depressant, in low doses to alleviate insomnia.
- Other common side effects include excessive sweating, headache, insomnia, sedation, dizziness, and sexual dys-

function (changes in libido, impotence, ejaculatory or orgasmic disturbances).

- Other adverse effects include rash, dry mouth, urinary retention, weight gain (during long-term treatment).
- Abnormal lab results may occur with SSRIs.
- SSRIs have the benefit of being safe on overdose.
- SSRI withdrawal symptoms include influenza-like symptoms, dizziness, nausea, and insomnia; these symptoms may appear even with slow tapering of dosage.
- Serotonin syndrome is usually triggered by the use of multiple serotonergic drugs, and can be potentially lethal, but resolves with discontinuation of the medications.
- Red flags include: tremor, hypertension, tachycardia, diarrhea, myoclonus, ocular oscillations, and in a severe form, may lead to convulsions and even coma.

2. Tricyclic and Tetracyclic Antidepressants

Table 4– Tricyclic and Tetracyclic Antidepressants and Recommended Doses

Generic Name	Brand Name	Initial Dose (mg/d)	Maintenance Dose (mg/d)
Amitriptyline	Elavil	25 tid	75-200
Clomipramine	Anafranil	25 od	75-300
Doxepin	Sinequan	25 tid	75-200
Imipramine	Tofranil	25 tid	75-300

* These are guidelines. Doses may vary on individual basis.

**ECG should be done prior to the commencement of TCA's and during their use.

***Slow titration is advisable unless otherwise indicated as persons with DD cannot communicate the adverse effects of these medications.

What are TCAs adverse effects?

- Common side effects: nausea, vomiting, and gastrointestinal discomfort.
- Anticholinergic effects include dry mouth, blurred vision, constipation, urinary hesitancy, tachycardia, and may impair memory.
- Most patients develop some tolerance to the dry mouth side effect over time. However, ongoing dry mouth may lead to problems with chewing, swallowing, speaking, increased risk of dental carries, denture fit and oral thrush. Treatment includes either stopping these medications, or changing with other medications that have a lower anticholinergic profile. In addition, other strategies include chewing sugarless gum or using sugarless candy, as both stimulate saliva production. For symptomatic relief, artificial saliva (e.g., Moi-Stir, Salivart or Oral Balance) may be beneficial for some patients. Finally, to diminish the risk of dental carries, use of sugarless food preparations is recommended.
- Constipation is a commonly occurring problem in people with DD. Constipation and bowel distention are significant side effects due to potentially severe complications such as obstruction. Therefore, patients taking drugs with anticholinergic properties need adequate monitoring. If constipation develops, dietary fiber, bulk laxatives, stool softeners, and osmotic agents are helpful strategies to use. Fluid intake is also very important in preventing constipation, with eight to ten glasses of water per day being recommended.
- Other adverse effects include sedation, carbohydrate craving, weight gain, orthostatic hypotension, cardiac effects, tremor, and seizure induction.

- TCAs may cause sexual dysfunction including changes in libido, impotence, or priapism (prolonged, painful erection) especially with Amitriptyline and Desipramine.
- TCA withdrawal may cause nausea, vomiting, diarrhea, abdominal cramps, chills, cold sweats, headache, and insomnia within two weeks of abrupt discontinuation.
- Red flags of TCA toxicity include dilated pupils, blurred vision, dry skin, hyperpyrexia, ileus, urinary retention, confusion, seizures, arrhythmias, and hypotension.
- TCAs overdose can be lethal.

3. Monoamine Oxidase Inhibitors (MAOI)

Table 5– MAOIs and Recommended Doses

Generic Name	Brand Name	Initial Dose (mg/d)	Maintenance Dose (mg/d)
Moclobemide	Manerix	100 tid	300-600

*These are guidelines. Doses may vary on individual basis.

What are MAOIs adverse effects?

- Most common are: postural hypotension (which may not appear until the third to sixth week of treatment), insomnia, agitation, sedation, and sexual dysfunction (impotence).
- Other adverse effects include weight change, dry mouth, constipation, and urinary retention.
- MAOIs may cause liver damage.
- MAOIs are the most likely to lower seizure threshold and should be only considered for truly resistant cases.

B. Antianxiety Medications**Table 6– Antianxiety Medications and Recommended Doses**

Generic Name	Brand Name	Short Acting/ Long Acting	Initial Dose (mg/d)	Maintenance Dose (mg/d)
Alprazolam	Xanax	Short	0.25-0.5	0.5-1
Clonazepam	Rivotril	Long	0.25	0.5-1
Diazepam	Valium	Long	2.5	5-20
Lorazepam	Ativan	Short	1	1-4
Oxazepam	Serax	Short	10	15-60
Temazepam	Restoril	Short	15	15-30

*These are guidelines. Doses may vary on individual basis.

1. Benzodiazepines (BDZ)

How long before BDZs become effective?

There is a rapid onset of effects within hours. However, the full range clinical response may take several days.

Why is it being prescribed?

Management of psychiatric states, such as:

- Anxiety disorders
- Depression
- Bipolar type I illness
- Akathisia
- Alcohol withdrawal
- Insomnia

BDZ alone should only be used for a maximum of three weeks.

Long-term treatment of insomnia includes behavioural modification, relaxation techniques, and sleep hygiene. May consider Trazodone as a non-addictive alternative to BDZ for treatment of insomnia.

How long is it necessary to take this medication?

It is recommended to minimize the use of long-acting BDZ beyond three months. In addition, short-acting BDZ should not be used for more than fourteen days.

What are BDZs side effects?

- All benzodiazepines can produce sedation and decrease available cognition.
- The use of benzodiazepines may lead to some impairment in memory and even impair new learning.
- Cautious use in elderly is advocated given increased sensitivity to sedation, memory impairment, ataxia, risk of falls.
- Hostility, disinhibition, self-injurious behaviour, and aggression are occasionally seen as paradoxical reactions to benzodiazepines, especially in people who exhibit evidence of stereotypical, self-injurious behaviours prior to starting treatment with BDZ.
- In case these paradoxical effects occur, close monitoring is advisable during discontinuation of the BDZ.
- BDZs may cause sexual dysfunction (changes in libido).
- BDZs can cause urinary retention.
- Abuse, tolerance and dependence potential
- Abnormal lab results may occur: thrombocytopenia.
- Discontinuation syndrome

Discontinuation of BDZ should be done on a gradual basis, because rapid taper or abrupt discontinuation may lead to a withdrawal syndrome with symptoms such as rebound anxiety, insomnia, and weakness. In addition, the discontinuation syndrome may present with seizures, confusion, and psychotic symptoms. Furthermore, there is a higher likelihood of occurrence of these symptoms after discontinuation of shorter-acting agents. In these cases, one of the strategies used to decrease withdrawal symptoms is to switch a short-acting agent to a longer acting BDZ prior to starting the tapering. Finally, relapse of anxiety disorder need to be considered should symptoms continue for more than two weeks after stopping the medication.

- **BDZ overdose.**
Overdose with BDZ alone has a favorable outcome; however, it may be fatal in association with alcohol, antidepressants, or antipsychotics.
Flumazenil may be used to treat BDZ overdose.

2. Other Agents

(i) Buspirone

Table 7– Buspirone and Recommended Doses

Generic Name	Brand Name	Initial Dose (mg/d)	Maintenance Dose (mg/d)
Buspirone	BuSpar	5 bid	10-30 bid

*These are guidelines. Doses may vary on individual basis.

**Caution should be exercised when treating symptoms of anxiety when other mental disorders are involved.

Why is it being prescribed?

Management of psychiatric states, such as:

- anxiety disorders, in particular generalized anxiety disorder which may influence occurrence and severity of agitation and behavioural problems, including aggression and self-injury.

How long before it becomes effective?

- It takes two to three weeks to achieve its therapeutic effects.

What are its adverse effects?

- Headache, nausea, dizziness, and rarely insomnia.

(ii) Beta-blockers

Table 8– Beta-blockers and Recommended Doses

Generic Name	Brand Name	Initial Dose (mg/d)	Maintenance Dose (mg/d)
Propranolol	Inderal	10-20 bid	20 bid-tid
Pindolol	Visken	5 bid	10 bid

*These are guidelines. Doses may vary on individual basis.

** Caution Beta-blockers can aggravate depression in persons at risk.

Why is it being prescribed?

- Anxiety disorders, in particular social phobia-performance type (propranolol), or
- Lithium-induced postural tremor (propranolol)
- Neuroleptic-induced acute akathisia (propranolol); which may influence occurrence and severity of behaviours, such as impulsivity, aggression (propranolol, pindolol)

How long before it becomes effective?

- Beta-adrenergic blockers act within one hour of administration.
- For treatment of chronic disorders, the therapeutic effects may not be seen until four to eight weeks of treatment.
- Treatment should never be discontinued abruptly.
- Beta-blockers need to be discontinued if heart rate is less than 50, systolic blood pressure is less than 90, or if symptoms such as dizziness, ataxia, and wheezing occur.

C. Sedatives/Hypnotics

These agents fall into several pharmacological categories:

- Antihistamines (e.g., Hydroxyzine, Diphenhydramine)
- Barbiturates (e.g., Phenobarbital, Amobarbital sodium)
- Benzodiazepines
- Chloral derivatives (e.g., Chloral hydrate, Paraldehyde)
- Cyclopyrrolone derivatives (e.g., Zopiclone)
- Imidazopyridine agent (e.g., Zolpidem)
- L-Tryptophan

Mood Stabilizers

Table 9– Mood Stabilizers and Recommended Doses

Generic Name	Brand Name	Initial Dose (mg/d)	Maint Dose (mg/d)
Lithium Carbonate	Carbolith, Lithane	300 bid-tid	1200-1800
Lithium Carbonate Long Action	Duralith	300 bid	600-1800

**These are guidelines, doses may vary on individual basis (mg/kg body weight)

Why is it being prescribed?

Management for psychiatric states such as:

- Acute mania and prophylaxis of bipolar illness type I
- Cyclothymic disorder
- Cycloid psychosis (especially in Prader-Willi syndrome)
- These states may influence occurrence and severity of behaviours such as aggression

How long before it becomes effective?

- Response to lithium alone can take 1 to 3 weeks of treatment at therapeutic concentrations.

How long is necessary to use mood stabilizers?

Mood stabilizer maintenance treatment is indicated in several circumstances:

- after the first episode in patients who are adolescents or 30 years or older;
- male gender;
- positive family history of bipolar disorder;
- poor support network;
- history of severe first episode;
- high suicide risk.

What are lithium's adverse effects?

- Nausea, vomiting, and gastrointestinal discomfort may occur. It is possible to significantly reduce these adverse effects by taking the medication with meals, by using sustained-release preparations (e.g., Lithobid), or by giving smaller doses more often.
- Diarrhea may occur in patients treated with lithium, particularly during the first six months of treatment, and when serum lithium levels exceed 0.8. This side effect is important because dehydration may lead to accumulation of lithium with potential intoxication.
- Weight gain may occur. It is difficult to treat, and it may be partially reversible if lithium is stopped.
- Sexual dysfunction such as priapism may be experienced.
- Intention tremor of upper extremities may be present.
- Lithium-induced hypothyroidism increases with increasing duration of treatment. People with developmental disabilities may not be able to report the symptoms of hypothyroidism. Therefore, the thyroid functioning should be adequately monitored.
- Nephrogenic diabetes insipidus (NDI) are frequently caused by lithium treatment.
- People with developmental disabilities should be carefully monitored for polyuria. Increased urine volume may be

problematic to recognize in patients who are incontinent, and wear diapers. In addition, patients with developmental disabilities may have difficulties communicating increased thirst or adequately increasing their liquid intake to counteract the effects of polyuria. Moreover, these people may be at higher risk for developing dehydration and severe lithium intoxication. It is essential to address the misconception that polyuria results from excessive fluid intake because restricting liquids may lead to potential intoxication. Therefore, people with lithium related polyuria should be encouraged to have free access to liquids.

- Cardiac dysrhythmias may occur with lithium. Usually lithium must be discontinued.
- Dermatological effects can include worsening of eczema, acne, and psoriatic lesions.
- Cognitive effects are reported by some patients, including impaired memory, slowed reaction times, and sedation.
- Abnormal lab results may be observed.
- Lithium toxicity red flags include coarse tremor, speech difficulty, ataxia, confusion, myoclonus, seizures. Lithium toxicity is a medical emergency; management includes discontinuation of lithium, and rehydration; hemodialysis is required in most serious cases.

D. Anticonvulsants**Table 10– Anticonvulsants and Recommended Doses**

Generic Name	Brand Name	Initial Dose (mg/d)	Maint Dose (mg/d)	Blood Level (mmol/L)
Valproic Acid	Depakene	250 bid	1000-3000	350-700
Divalproex Na	Epival	250 bid	1000-3000	350-700
Carbamazepine	Tegretol	100 bid	800-1200	17-50
Lamotrigine	Lamictal	12.5-25 hs	50-250 bid	Nil
Gabapentin	Neurontin	300 od	600-1200	Nil
Topiramate	Topamax	25 bid	200-400	Nil

**These are guidelines, doses may vary on individual basis (mg/kg body weight)

1. Carbamazepine

Why is it being prescribed?

Management of psychiatric states such as:

- Acute mania and maintenance treatment of bipolar disorder, mixed states and rapid cycling, or
- Seizure disorders.
- Treatment for these can influence the occurrence and severity of outbursts and aggression; however, carbamazepine has been reported to produce hyperactivity, self-injury, or aggression.

How long before it becomes effective?

- The anticonvulsant and anti-pain effects have a rapid onset. However, the antimanic effects take longer to develop.

What are Carbamazepine's side effects?

- Common side effects include: dizziness, ataxia, dysarthria, clumsiness, sedation, and nausea
- Cardiac effects: conduction delay
- Cognitive effects: may impair memory in some people with DD.
- Liver damage
- Abnormal lab results may occur.

2. Valproic acid

Why is it being prescribed?

Management of psychiatric states such as:

- Acute mania; many clinicians consider valproic acid to be a first line antimanic agent for all ages except children under 10 due to its potential hepatotoxic side effects in this age group.
- Maintenance treatment of bipolar illness rapid cycling and mixed states (Valproic acid is the treatment of choice), or
- Seizure disorders.
- Treatment of these states may affect occurrence and frequency of associated behavioural outbursts.

How long before it becomes effective?

- The antimanic therapeutic effects may appear within one to two weeks of treatment.

What are its adverse effects?

- Similar to Carbamazepine

3. Gabapentin

Why is it being prescribed?

Management of medical/psychiatric states such as:

- Seizure disorders
- Anxiety disorders, in particular panic disorder and social phobia
- May be used to alleviate irritability

What are its adverse effects?

- Common side effects include sedation, ataxia, dizziness, dry mouth, and fatigue.

4. Lamotrigine

Why is it being prescribed?

Management of biomedical/psychiatric states, such as:

- Seizure disorders
- Maintenance treatment of bipolar illness, rapid cycling

What are its adverse effects?

- Common side effects include headache, dizziness, ataxia, blurred vision, fatigue, nausea
- Dermatological effects include a rash which may occur in up to 40% of patients, especially when initial doses are high. Severe rashes, which may lead to Stevens-Johnson syndrome, usually occur during the first eight weeks of treatment.

E. Antipsychotic Agents (Neuroleptics)

Table 11– Neuroleptics and Recommended Doses

Generic Name	Brand Name	Initial Dose (mg/d)	Maintenance Dose (mg/d)
Chlorpromazine	Largactil	50-100	200-400
Thioridazine	Mellaril	30-150	75-400
Metho- trimeprazine	Nozinan	25-100	100-200
Loxapine	Loxapac	10-50	60-100
Perphenazine	Trilafon	4-12	12-24
Trifluoperazine	Stelazine	2-15	6-20
Fluphenazine	Moditen	2.5-10	1-5
Haloperidol	Haldol	1.5-3	4-12
Pimozide	Orap	2-4	2-12

**Caution should be exercised in using high doses of neuroleptics because of possible severe side effects especially in persons with Developmental Disability who may not be able to communicate these side effects.

F. Atypical Antipsychotics**Table 12– Atypical Antipsychotics and Recommended Doses**

Generic Name	Brand Name	Initial Dose (mg/d)	Maintenance Dose (mg/d)
Clozapine	Clozaril	12.5	200-600
Olanzapine	Zyprexa	5-10	10-20
Risperidone	Risperdal	0.5-1	1-6
Quetiapine	Seroquel	50	300-750

Why are they being prescribed?

Management of psychiatric states such as:

- Psychoses, including schizophrenia, schizoaffective disorder, delusional disorder, acute mania, and secondary psychoses occurring in the context of dementia, brain tumors, Huntington disease, substance abuse.
- Movement disorders such as Huntington disease and Tourette's disorder.
- Management of acute, uncontrollable, severe agitation and violent behaviour, or stereotypical and self-injurious behaviour.

How long is it necessary to take this medication?

- The duration of therapy with neuroleptics varies with the nature of the targeted diagnosis, or behaviour for which

medication was initiated. In patients who are suffering from schizophrenia, antipsychotics are recommended to be continued for two years for the first episode, five years for the second relapse, and may require indefinite maintenance after the third relapse. When anti-psychotics are used to manage severe maladaptive behaviors, attempts should be made to treat the underlying causes if identifiable and discontinue them as soon as possible.

What are antipsychotics' adverse effects?

- Convulsant effects may occur.
- Endocrinological effects may occur.
- Cardiac effects may occur especially with low potency neuroleptics (e.g., Thioridazine).
- Orthostatic hypotension occurs especially with low potency neuroleptics during the first few days of treatment; however, tolerance usually develops rapidly.
- It is important to monitor the blood pressure (lying and standing) during the first few days.
- Sexual side effects such as impotence or ejaculatory and orgasmic disturbances may be experienced with antipsychotics, especially Thioridazine. Clozapine and Risperidone may cause priapism.
- Most neuroleptics may lead to weight gain.
- Other side effects may include liver damage, urinary retention and dysphagia.
- Neurological effects may include acute, dose-related neuroleptics-induced movement abnormalities, described as extrapyramidal side effects (EPSE). EPSE occur in approximately one third of people with developmental disabilities receive neuroleptics. Symptoms usually appear relatively early in the course of therapy with neuroleptics,

especially with more frequent or larger doses, are reversible with discontinuation of medication, and respond to treatment with anticholinergic, anti-Parkinson medications. The EPSE include acute dystonia, neuroleptic-induced Parkinsonism, and acute akathisia (Marsden et al, 1981; Bodfish et al, 1997).

- Tardive dyskinesia (TD) is a movement disorder presenting with frequent, repetitive, involuntary movements of the lips, tongue, jaw, face, trunk, or limbs. These abnormal involuntary movements may be exacerbated by emotional stress. In addition, repetitive motor activities or fine motor tasks may worsen TD. On the other hand, trying to voluntarily control these symptoms may either relieve or accentuate the abnormal movements. However, TD symptoms may diminish with relaxation, and are absent during sleep. The prevalence of TD in the population with DD is quite high. Up to one third of children and adults receiving neuroleptic medication have been reported to develop TD. Risk factors for TD include length and degree of neuroleptic exposure, dosage and age. However, TD may appear in persons without histories of neuroleptic exposure.
- Neuroleptic malignant syndrome (NMS) is a rare, but potentially fatal adverse effect of all antipsychotics. NMS symptoms include muscle rigidity (lead pipe rigidity) or catatonia, instability of the autonomic nervous system (hypertension or labile blood pressure, arrhythmias, dilated pupils, sweating, and incontinence), rapid onset of fever, and altered mental status (confusion, agitation, stupor). (Boyd, 1993).

Treatment involves stopping the causative medication, adequate hydration, and possibly using a dopamine agonist (Bromocriptine), or a muscle relaxant (Dantrolene)

- **Antipsychotic overdose:**
Signs and symptoms of overdose include dilated pupils, EPSE, increased heart rate, and low blood pressure. The overdose usually has a favorable prognosis except for Thioridazine and Mesoridazine due to their cardiotoxic side effects. In addition, the outcome of neuroleptic medication overdose is more guarded in the presence of alcohol and benzodiazepines; complications include delirium, respiratory depression, and seizures.
- **Neuroleptic withdrawal symptoms:**
Nausea, vomiting, decreased appetite, behavioural changes, decreased sleep, sweating, abnormal movements, and seizures have been reported. These symptoms usually occur after long-term treatment, and an abrupt discontinuation of therapy.
A gradual reduction of 10% to 25% of the original dose every two to four weeks may be helpful in avoiding or minimizing these withdrawal symptoms. Low-dose Lorazepam or Propranolol may be helpful in managing these side effects.
- Atypical antipsychotics have less side effects than do typical neuroleptics.

G. Stimulants

Table 13– Stimulants and Recommended Doses

Generic Name	Brand Name	Initial Dose (mg/d)	Maintenance Dose (mg/d)
Methylphenidate	Ritalin	2.5 am & noon	5-40
Methylphenidate	Ritalin SR	20 am	20-40
Dextro-amphetamine	Dexedrine	2.5-5 od	5-40
Dextro-amphetamine	Dexedrine Spansules	10od	10-40

Why are they being prescribed?

- Attention deficit hyperactivity disorder (ADHD)

What are their adverse effects?

- Stimulants may exacerbate tics, obsessions, compulsions, epilepsy, anxiety, or psychotic features.
- Growth delay, anorexia and weight loss in children
- Difficulty falling asleep, nightmares
- Irritability, anxiety
- Hair loss and hematological side effects are rare.
- Potential for abuse and tolerance
- Stimulants withdrawal may lead to symptoms of dysphoria, depression, fatigue, hypersomnia, and hyperphagia.

Summary

This chapter provides the reader with a list of prescribed medications (pharmacotherapy) used in persons with dual diagnosis - (developmental disability and mental disorders). An attempt has been made to encourage clinicians, caregivers, and families to use psychotropic medications only when a psychiatric diagnosis is supported. It is understood that from time to time these medications may be used to manage acute and violent behaviours. In these instances, however, every effort has to be made to initiate other rehabilitative interventions whenever possible. The various categories of these pharmacological treatments are outlined in groups that are addressing different mental health/behaviour problems. This chapter also offers a list of desirable/ undesirable (side-effects) effects of all medications listed. An attempt has been made to provide the severity and malignancy of the side effects in an effort to assist the

reader in his/her clinical decisions as to the subsequent steps necessary to be followed in the resolution of the medical/mental crises resulting from the medication used. Guidelines for use of medications in various ways (i.e., continuous, on an as per needed basis, in crisis) are also provided.

The most important steps to be followed in a situation where a client is thought to be suffering from mental disorder/s is the following Axis:

1. Think of mental disorder as a possible explanation of certain behaviour changes.
2. Assess the problem behaviour.
3. Diagnose the problem as a mental disorder.
4. Treat the problem with medication whenever appropriate.
5. Follow-up to determine:
 - efficacy of medication used.
 - explore the side-effects, if any.
 - treat the side-effects.
 - maintain a minimal level of medication necessary to address the problems.
 - physical checkup re other physiological functions that can become affected by the prolonged use of medication.

It is to be remembered that the client is in the centre of our caring, and that various pieces of the puzzle of wellness/disease are necessary to be in place in order to maximize the beneficial effects of all of the parts, and enhance the quality of life of persons with a dual diagnosis.

Do You Know?

1. What are the categories of psychotropic medications?
2. For each category of medication, describe indications, mechanism of action, duration of treatment, side effects, and conditions under which the drug should be discontinued.
3. How would you use psychotropic drugs in order to minimize their adverse reactions?
4. How would you monitor for side effects?
5. What are the protocols on how to use PRN medications?

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Acknowledgements

Special thanks to Steven Weisblatt for his invaluable contribution to this chapter.