Using the AIMS to Screen for Tardive Dyskinesia

Demetrice Grier, PMHNP-BC (left), and Noemi Bermudez, DO (right), examine real patients living with tardive dyskinesia for muscle rigidity as part of the AIMS exam, to help differentiate tardive dyskinesia from drug-induced parkinsonism.

Mr Grier and Dr Bermudez are paid consultants for Neurocrine Biosciences, Inc.

Guidelines Recommend Regularly Screening Patients Taking Dopamine Receptor–Blocking Agents

The 2020 American Psychiatric Association (APA) *Practice Guideline for the Treatment of Patients With Schizophrenia* recommends that all patients with a history of treatment with antipsychotics should be clinically assessed for abnormal involuntary movements, such as tardive dyskinesia, at each visit.[1] A modified 2020 Delphi consensus study echoes this guidance.[2]

The APA guideline also states that assessment with a structured instrument, such as the Abnormal Involuntary Movement Scale (AIMS), should be conducted at less frequent intervals, such as every 12 months (or every 6 months in high-risk patients), or if a new onset or exacerbation of preexisting movements is detected.[1,2]

Patients considered at increased risk include those who:[1]

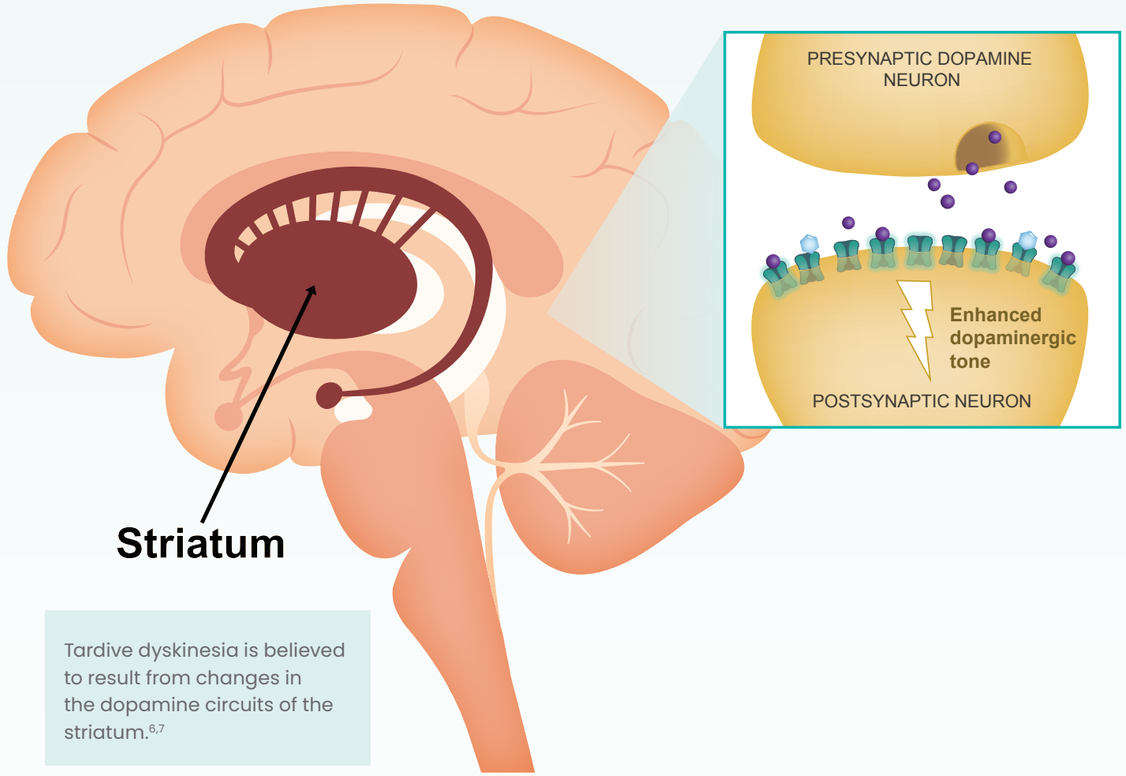
- Are aged 55 years or older
- Are female
- Are White or Black
- Have a mood disorder, intellectual disability, or central nervous system injury
- Have a history of akathisia, clinically significant parkinsonism, or acute dystonic reactions

SAMPLE TD SCREENING TIMELINE[1]

Understanding the Proposed Pathophysiology of Tardive Dyskinesia

Tardive dyskinesia is a drug-induced hyperkinetic movement disorder associated with the use of dopamine receptor blocking agents.[3,4] It is characterized by:

- Stereotypy (repetitive, purposeless movements)
- Athetoid movements (slow, writhing), and/or
- Choreiform movements (irregular, dance-like)[4,5]



Tardive dyskinesia is believed to result from changes in the dopamine circuits of the striatum.[6,7]

Prolonged dopamine blockade by antipsychotics may result in upregulation and hypersensitization of dopamine D_2 receptors, leading to the enhanced dopaminergic signaling.[6-8]

Differentiating Tardive Dyskinesia From Other Drug-Induced Movement Disorders

Tardive dyskinesia must be differentiated from other drug-induced movement disorders because the recommended management strategies differ.

The key to differential diagnosis is knowing what the characteristic movements of different drug-induced movement disorders look like, though other aspects of the patient history, such as any recent medication changes, can also provide clues.

DRUG-INDUCED MOVEMENT DISORDERS

		Acute Drug-Induced Movement Disorders		
	Tardive Dyskinesia	Drug-Induced Parkinsonism	Acute Akathisia	Acute Dystonia
What are the symptoms?[5,10]	**Movements may be:** • Repetitive, purposeless, • Rapid, jerky, nonrepetitive, and/or • Slow, sinuous, continuous • Can affect any body part	• Tremor • Slowing of movement • Rigidity • Reduced blink rate • Reduced arm swing • Flexed posture • Shuffling or freezing gait	• Inner feeling of restlessness and inability to remain seated • May be associated with foot tapping, shuffling, shifting weight, or rocking, resulting from an urge to move	• Pulling, twisting, sustained, and repetitive movements that are usually focal
When did it start?[5,a]	Weeks to years[b]	Days to months	Days to months	Hours to days
How may it change?[1,5,11]				
Antipsychotic decrease	May be revealed or worsened	Improves	Improves	Improves
Antipsychotic increase	May temporarily improve or be "masked"	Worsens	Worsens	Worsens
Adding anticholinergics	May worsen	May improve	May not respond	May improve

[a]Following starting or changing the antipsychotic dose. Onset may occur earlier or later than the typical time frames listed here.[5]
[b]Tardive dyskinesia may be "masked" by antipsychotic treatment and first appear after antipsychotics are reduced or withdrawn.[5]

Tips for Conducting the AIMS Exam[12-14]

BEFORE EXAM[13]

1 OBSERVE PATIENT

While walking to the exam room

While waiting

2 ASK PATIENT TO REMOVE

Gum

Shoes

Socks

3 SEAT PATIENT

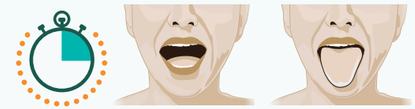
In a firm chair with no arms

Real patient living with tardive dyskinesia

DURING EXAM

1 MOUTH OBSERVATION[12]

A. Have patient open mouth, hold for 15 seconds, close, repeat for a total of 2 times
B. Have patient protrude tongue, hold for 15 seconds, repeat for a total of 2 times



Observe tongue at rest and identify changes in tongue movement

2 FINGER TAPPING[12]

Have patient **tap each finger** rapidly to their thumb for **15 seconds per hand**

Observe facial and leg movements

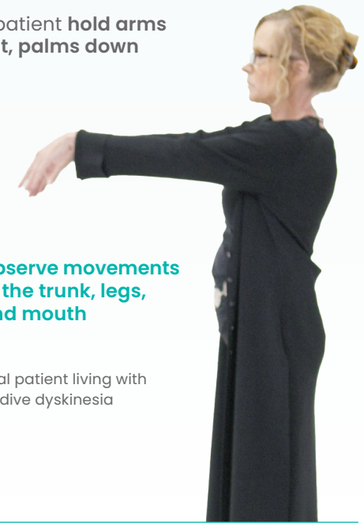
3 NONPHYSICAL ACTIVATION MANEUVER[14]

Have patient **recite** the names of the months backward **OR** count backward from 100

Observe facial and leg movements

4 ARM ELEVATION[12]

Have patient **hold arms out flat, palms down**



Observe movements of the trunk, legs, and mouth

Real patient living with tardive dyskinesia

Understanding AIMS Scoring[12]

The AIMS is a 12-item screening tool used to rate tardive dyskinesia severity and to follow progression over time. Scan the QR code for instructional videos about conducting and scoring the AIMS exam.

Score	Descriptors (For items 1-7)
0	No dyskinesia
1	Minimal or slight dyskinesia: Low amplitude, present during some but not most of the exam
2	Mild dyskinesia: Low amplitude and present during most of the exam (or moderate amplitude and present during some of the exam)
3	Moderate dyskinesia: Moderate amplitude and present during most of the exam
4	Severe dyskinesia: Maximal amplitude and present during most of the exam

Facial and Oral Movements	None	Minimal	Mild	Moderate	Severe
1. **Muscles of Facial Expression** eg, movements of forehead, eyebrows, periorbital area, cheeks, include frowning, blinking, smiling, grimacing	0	1	2	3	4
2. **Lips and Perioral Area** eg, puckering, pouting, smacking	0	1	2	3	4
3. **Jaw** eg, biting, clenching, chewing, mouth opening, lateral movement	0	1	2	3	4
4. **Tongue** Rate only increase in movement both in and out of mouth, NOT inability to sustain movement	0	1	2	3	4
Extremity Movements					
5. **Upper (arms, wrists, hands, fingers)** Include choreic movements (ie, rapid, objectively purposeless, irregular, spontaneous), athetoid movements (ie, slow, irregular, complex, serpentine). DO NOT include tremor (ie, repetitive, regular, rhythmic)	0	1	2	3	4
6. **Lower (legs, knees, ankles, toes)** eg, lateral knee movement, foot tapping, heel dropping, foot squirming, inversion and eversion of foot	0	1	2	3	4
Trunk Movements					
7. **Neck, shoulders, hips** eg, rocking, twisting, squirming, pelvic gyrations	0	1	2	3	4

Global Judgments	None	Minimal	Mild	Moderate	Severe
8. **Severity of abnormal movements overall**	0	1	2	3	4
9. **Incapacitation due to abnormal movements**	0	1	2	3	4
10. **Patient's awareness of abnormal movements (rate only Patient's report)** 0=No awareness; 1=Aware, no distress; 2=Aware, mild distress; 3=Aware, moderate distress; 4=Aware, severe distress	0	1	2	3	4
Dental Status					
11. **Current problems with teeth and/or dentures**	☐ Yes	☐ No			
12. **Does the patient usually wear dentures?**	☐ Yes	☐ No			

Diagnosis and Treatment of Tardive Dyskinesia

Diagnosing Tardive Dyskinesia

A diagnosis of tardive dyskinesia should be made on the basis of patient history, symptoms, and the clinician's best judgment.

The AIMS is a screening instrument and is not diagnostic; however, scoring a 2 or higher suggests possible tardive dyskinesia.[15]

- According to the Schooler-Kane criteria, a rating of 2 or higher in 2 or more areas, or a rating of 3 or higher in 1 or more areas, is considered a positive AIMS exam.[15]
- A modified Delphi consensus study of the screening, diagnosis, and treatment of tardive dyskinesia reported consensus agreement that a patient having a rating of 2 or greater in at least 1 body area should be considered as possibly having tardive dyskinesia.[2]

Treating Tardive Dyskinesia

The APA schizophrenia practice guideline recommends the following:

- Patients who have moderate to severe or disabling tardive dyskinesia associated with antipsychotic therapy be treated with a reversible inhibitor of VMAT2.[1]
- Treatment with a VMAT2 inhibitor be considered for patients with mild tardive dyskinesia based on patient preference, associated impairment, or effect on psychosocial functioning.[1]

ICD-10 Code for Tardive Dyskinesia

G24.01 Drug-induced subacute dyskinesia

Disclaimer: This coding information is intended solely for educational purposes regarding possible codes applicable to tardive dyskinesia. Coding information is subject to change. Neurocrine disclaims any responsibility for claims submitted by providers or physicians. It is the provider's responsibility to determine appropriate codes, charges, and modifiers, and to submit bills for services and products consistent with what was rendered as well as the patient's insurer requirements. Third-party payers may have different coding requirements. Such policies can change over time. Providers are encouraged to contact third-party payers for each patient to verify specific information on their coding policies.

References

1. American Psychiatric Association. *The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia*. 3rd ed. American Psychiatric Association; 2021.
2. Caroff SN, Citrome L, Meyer J, et al. A modified Delphi Consensus Study of the screening, diagnosis, and treatment of tardive dyskinesia. *J Clin Psychiatry*. 2020;81(2):19cs12983.
3. Jankovic J, Lang AE. Diagnosis and assessment of Parkinson disease and other movement disorders. In: Jankovic J, Mazziotta J, Pomeroy S, Newman N. *Bradley and Daroff's Neurology in Clinical Practice*. 7th ed. Elsevier Health Sciences; 2016:223-249.
4. Fahn S, Jankovic J, Hallett M. *Principles and Practice of Movement Disorders*. 2nd ed. Saunders; 2011:415-446.
5. Hauser RA, Meyer JM, Factor SA, et al. Differentiating tardive dyskinesia: a video-based review of antipsychotic-induced movement disorders in clinical practice. *CNS Spectr*. 2022;27(2):208-217.
6. Stahl S. Antipsychotic agents. *Stahl's Essential Pharmacology*. 4th ed. Cambridge University Press; 2013:145-252.
7. Coppen EM, Roos RA. Current Pharmacological Approaches to Reduce Chorea in Huntington's Disease. *Drugs*. 2017;77(1):29-46.
8. Stahl SM. Neuronal traffic signals in tardive dyskinesia: not enough "stop" in the motor striatum. *CNS Spectr*. 2017;22(6):427-434.
9. Shin H-W, Chung SJ. Drug-induced parkinsonism. *J Clin Neurol*. 2012;8(1):15-21.
10. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed., text rev. American Psychiatric Association; 2022.
11. Ward KM, Citrome L. Antipsychotic-Related Movement Disorders: Drug-Induced Parkinsonism vs. Tardive Dyskinesia-Key Differences in Pathophysiology and Clinical Management. *Neurol Ther*. 2018;7(2):233-248.
12. Guy W. *ECDEU Assessment Manual for Psychopharmacology*. US Department of Health, Education, and Welfare; Public Health Service; Alcohol, Drug Abuse, and Mental Health Administration; National Institute of Mental Health Psychopharmacology Research Branch, Division of Extramural Research Programs; 1976.
13. Munetz MR, Benjamin S. How to examine patients using the Abnormal Involuntary Movement Scale. *Hosp Community Psychiatry*. 1988;39(11):1172-1177.
14. Citrome L. Clinical management of tardive dyskinesia: five steps to success. *J Neurol Sci*. 2017;383:199-204.
15. Schooler NR, Kane JM. Research diagnoses for tardive dyskinesia. *Arch Gen Psychiatry*. 1982;39(4):486-487.

NEUROCRINE® BIOSCIENCES