Tardive Dyskinesia (TD) Treatment Toolkit: Reducing the Inappropriate Use of Anticholinergics for the Management of TD

Resources and Materials for HEALTHCARE PROFESSIONALS

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TOOLKIT INTRODUCTION

About Tardive Dyskinesia

Over 6% of US adults, about 15.4 million people, live with a serious mental illness (SMI).[1] SMIs are a group of debilitating conditions that include schizophrenia, acute mania, bipolar disorder, major depressive disorder, delusional disorder, severe agitation, borderline personality disorder, Tourette syndrome, dementia, and substance-induced psychotic disorder.[2]

Many patients with SMI end up needing multiple medications to manage their condition and help them function.[3] Antipsychotic medication (AP) is the main treatment option for managing SMIs, both in the acute phase of illness and for longer-term management. APs are effective in controlling SMI symptoms and maintenance doses are associated with lower relapse rates, but their prolonged use can lead to a condition called tardive dyskinesia (TD).[4]

TD is a persistent, involuntary movement disorder characterized by uncontrollable, abnormal, and repetitive movements of the face, torso, limbs, and fingers or toes.[5] There are at least 800,000 people in the United States living with TD, and, of those, ~60% have not yet been diagnosed.[6] Additionally, research suggests approximately 25% of all patients taking antipsychotic medications may have tardive dyskinesia. Based on a 2017 meta-analysis of 41 studies, ~30% of patients on first-generation APs had TD, ~20.7% on second-generation APs (with unspecified first-generation use) had TD, and ~ 7.2% on second-generation APs with no prior history of first-generation AP use had TD.[6,7]

In addition to the burden on the individual, studies show a significant economic burden associated with TD. For people with TD, the mean total all-cause healthcare costs increased by 26.2% post diagnosis. The major cost driver was inpatient admissions, with an increase of 56.1%, but outpatient clinic, outpatient pharmacy, and emergency room service costs were all also substantially higher.[8] The US total yearly healthcare and medication costs for people with TD were nearly double costs for those without TD—$54,656 vs $28,777 per person, respectively.[8]

As we address the challenges of caring for people with SMIs, it's important to include TD in the conversation. TD has a significant physical, social, and psychological impact on individuals and a substantial economic impact on the broader healthcare system.[8] Proactive identification, diagnosis, and treatment of TD can positively impact the lives of people with this debilitating movement disorder and the organizations caring for them. Click **here** to learn more about the connection between SMI and TD, and the burden of TD on patients and the healthcare system.

REFERENCES
1. National Institute of Mental Health. Mental illness. Updated March 2023. Accessed July 11, 2024. https://www.nimh.nih. gov/health/statistics/mental-illness **2.** Chokhawala K, Stevens L. Antipsychotic medications. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. Updated February 26, 2023. Accessed July 11, 2024. https://www.ncbi.nlm.nih.gov/books/ NBK519503/?report=classic **3.** Stassen HH, Bachmann S, Bridler R, et al. Detailing the effects of polypharmacy in psychiatry: longitudinal study of 320 patients hospitalized for depression or schizophrenia. *Eur Arch Psychiatry Clin Neurosci.* 2022;272(4):603- 619. doi: 10.1007/s00406-021-01358-5. **4.** Howe J, Lindsey L. The role of pharmacists in supporting service users to optimise antipsychotic medication. *Int J Clin Pharm.* 2023;45(5):1293-1298. doi: 10.1007/s11096-023-01630-9. **5.** Tardive dyskinesia (TD). National Alliance on Mental Illness. Updated May 2024. Accessed May 6, 2025. https://namimainlinepa.org/tardive-dyskinesia-td **6.** Data on file. Neurocrine Biosciences, Inc. **7.** Carbon M, Hsieh CH, Kane JM, et al. Tardive dyskinesia prevalence in the period of second-generation antipsychotic use: a meta-analysis. Psychiatrist.com. March 29, 2017. Accessed May 6, 2025. https://www.psychiatrist.com/jcp/tardive-dyskinesia-prevalence/ **8.** Utah Department of Health & Human Resources. Resources and Options Regarding Tardive Dyskinesia. November 2023. Accessed May 6, 2025. https://le.utah.gov/interim/2023/pdf/00004492.pdf

Toolkit Background

Clinical guidelines for TD recommend the use of vesicular monoamine transporter 2 (VMAT2) inhibitors.[1,2] These guidelines also state that anticholinergics (eg, benztropine), which are used to treat some types of drug-induced movement disorders, are not appropriate as TD treatment because they do not alleviate the symptoms of TD and, in some instances, may aggravate them.[3] Despite this, anticholinergics are often inappropriately used for TD, posing unnecessary risks to patients.[4]

By addressing inappropriate anticholinergic use—particularly in TD treatment—clinicians can play a crucial role in reducing unnecessary healthcare costs and improving patient outcomes.[4] The improper use of anticholinergics for the treatment of TD, not only affects individual patients but also places a financial strain on healthcare systems due to increased hospital admissions, emergency care, and medication expenses.[4] By implementing policy changes and enhancing provider training to reduce the unecessarily high anticholinergic burden, healthcare systems can improve patient outcomes and overall quality of life in TD care settings.[4]

Raising awareness of the inappropriate use of anticholinergics for the treatment of TD is essential for improving patient care. This kit is designed to help your organization better understand the risks of anticholinergic use in TD and provides tools to help providers make treatment decisions more in line with clinical guidelines. By ensuring that newly diagnosed TD patients are not prescribed anticholinergics for the management of their TD symptoms and that those currently on these medications to treat their TD are transitioned to alternative therapies, we may enhance patient outcomes and reduce unnecessary harm.

Toolkit Components

This toolkit consists of two sections designed to help your organization minimize the inappropriate use of anticholinergics in treating TD, given the significant risks they pose to patients.[4]

Section 1: Care Team Resources

1. **Anticholinergics and Tardive Dyskinesia:** Providing care team members with information about the inappropriate use of anticholinergics for the treatment of TD.
2. **Clinical Guidance and Recommendations:** Providing care team members with the latest guidelines and recommendations for the appropriate treatment of TD.
3. **Anticholinergic Burden Calculator:** Providing care teams with a clinical decision support tool designed to help healthcare professionals assess a patient's anticholinergic burden—the cumulative effect of taking one or more medications with anticholinergic properties.

Section 2: EHR Resources

1. **Patient List Report**: A guide to creating a Patient List Report in the EHR that will allow you and your clinical staff to quantify and identify which of your patients have received a TD diagnosis and are receiving anticholinergics for the management of their TD.
2. **Alerts:** A guide to creating two alerts that can be integrated into your EHR to: (1) notify clinicians when attempting to prescribe anticholinergic therapy for the treatment of TD; and (2) notify clinicians when a patient with an active TD diagnosis is receiving anticholinergic medication without an underlying diagnosis to support proper anticholinergic treatment.

Content within this toolkit is available for digital access and download. For print versions of materials, please contact your Corporate Account Manager.

REFERENCES
1. Keepers GA, Fochtmann LJ, Anzia JM, et al. The American Psychiatric Association Practice Guideline for the Treatment of Patients with Schizophrenia. *3rd ed.* American Psychiatric Association Publishing; 2020. **2.** Bhidayasiri R, Jitkritsadakul O, Friedman JH, Fahn S. Updating the recommendations for treatment of tardive syndromes: a systematic review of new evidence and practical treatment algorithm. *J Neurol Sci*. 2018;389:67-75. **3.** American Psychiatric Association. The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia, *3rd ed.*, American Psychiatric Association Publishing; 2021. **4.** Vanegas-Arroyave N, Caroff SN, Citrome L, et al. An evidence-based update on anticholinergic use for drug-induced movement disorders. *CNS Drugs*. 2024;38:239–254.

CARE TEAM RESOURCES

Anticholinergics and Tardive Dyskinesia

Download this two-page resource to provide care teams with information about the inappropriate use of anticholinergics for the treatment of TD.

Inappropriate Use of Anticholinergics for the Treatment of TD

Understanding Tardive Dyskinesia (TD)

TD is a drug-induced movement disorder (DIMD) associated with the prolonged use of antipsychotics.[1] It is characterized by uncontrollable, abnormal, and repetitive movements of the face, torso, limbs, and fingers or toes.[2] TD can significantly impair quality of life and it is important for healthcare providers to stay informed about the best treatment options for managing this condition.[3]

Guidelines and Recommendations for Treatment of TD

Clinical guidelines and recommendations include **vesicular monoamine transporter 2 (VMAT2) inhibitors** as the **first-line treatment for tardive dyskinesia**. These medications work by regulating the release of dopamine in the brain, which helps reduce the involuntary movements associated with TD.[4–6]

These guidelines and recommendations also state that **anticholinergics** (eg, benztropine), which are used to treat some types of DIMDs, **are not appropriate as TD treatment** because they do not alleviate the symptoms of TD and, in some instances, may aggravate them.[7]

Clinical Guidelines and Recommendations for TD Treatment	
2020 American Psychiatric Association (APA) Guidelines[4]	• Treatment with a VMAT2 inhibitor is recommended in patients with moderate to severe TD and may also be considered in patients with mild TD • Anticholinergic medications **do not improve and may even worsen TD**
2020 Delphi Panel Consensus Recommendations[8]	• Treatment of TD with a VMAT2 inhibitor should be considered as part of a comprehensive treatment plan • As part of TD management, **providers should consider modifying anticholinergic agents** (eg, reduce dose, taper off)
2013 American Academy of Neurology Guidelines[9]	• New generation VMAT2 inhibitors should be recommended as first-line treatment for TD • There are **insufficient data to recommend anticholinergics for the treatment of TD**
2023 American Geriatric Society's Beers Criteria[10]	• Benztropine (oral) and trihexyphenidyl are **not recommended in older adults for prevention or treatment of extrapyramidal symptoms associated with antipsychotics**

There is also insufficient evidence to support a guideline statement on the use of the following treatments in individuals with TD[11]:

- Benzodiazepines (e.g., clonazepam)
- Change in antipsychotic therapy to a lower-potency medication
- Ginkgo biloba
- Cessation or reduction of antipsychotic medication
- Amantadine
- Vitamin E

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Clinical Guidance and Recommendations

Download this one-page resource to learn more about the latest guidelines and recommendations for the appropriate treatment of TD.

Clinical Guidance and Recommendations for the Treatment of Tardive Dyskinesia

Clinical guidelines and recommendations for tardive dyskinesia (TD) include screening and treating with vesicular monoamine transporter 2 (VMAT2) inhibitors[1,2]

Anticholinergics are not suitable for treating TD as they do not alleviate symptoms and may even exacerbate them.[3]

2020 American Psychiatric Association (APA) Guidelines[1]	• Treatment with a VMAT2 inhibitor is recommended in patients with moderate to severe TD and may also be considered in patients with mild TD • Anticholinergic medications **do not improve and may even worsen TD**
2020 Delphi Panel Consensus Recommendations[4]	• Treatment of TD with a VMAT2 inhibitor should be considered as part of a comprehensive treatment plan • As part of TD management, **providers should consider modifying anticholinergic agents** (eg, reduce dose, taper off)
2013 American Academy of Neurology Guidelines[5]	• New generation VMAT2 inhibitors should be recommended as first-line treatment for TD • There are **insufficient data to recommend anticholinergics for the treatment of TD**
2023 American Geriatric Society's Beers Criteria[6]	• Benztropine (oral) and trihexyphenidyl are **not recommended in older adults for prevention or treatment of extrapyramidal symptoms associated with antipsychotics**

There is also insufficient evidence to support a guideline statement on the use of the following treatments in individuals with TD[7]**:**

- Benzodiazepines (eg, clonazepam)
- Change in antipsychotic therapy to a lower-potency medication
- Ginkgo biloba
- Cessation or reduction of antipsychotic medication
- Amantadine
- Vitamin E

References: 1. Keepers GA, Fochtmann LJ, Anzia JM, et al. *The American Psychiatric Association Practice Guideline for the Treatment of Patients with Schizophrenia. 3rd ed.* American Psychiatric Association Publishing; 2020. **2.** Bhidayasiri R, Jitkritsadakul O, Friedman JH, Fahn S. Updating the recommendations for treatment of tardive syndromes: a systematic review of new evidence and practical treatment algorithm. *J Neurol Sci.* 2018;389:67-75. **3.** American Psychiatric Association. *The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia, 3rd ed.* American Psychiatric Association Publishing; 2021. **4.** 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. **5.** Summary of evidence-based guidelines for clinicians: treatment of tardive syndromes. American Academy of Neurology. Published 2013. Accessed March 28, 2025. https://www.aan.com/Guidelines/Home/GetGuidelineContent/613 **6.** 2023 American Geriatrics Society Beers Criteria® Update Expert Panel. *J Am Geriatr Soc.* 2023;2023(71):2052–81. **7.** Bhidayasiri R, Fahn S, Weiner WJ, et al. Evidence-based guideline: Treatment of tardive syndromes. *Neurology.* 2013;81(5):463-469.

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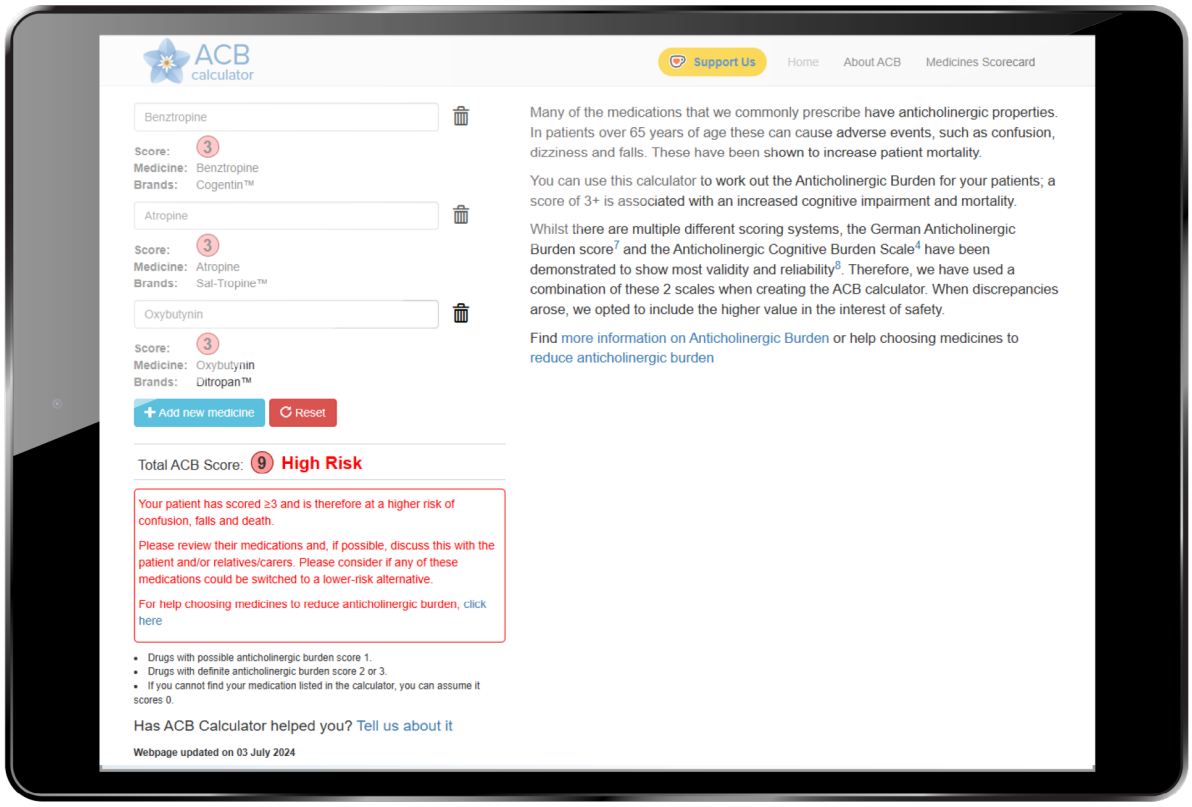
Anticholinergic Burden Calculator

Click **here** or scan the QR code below to access the Anticholinergic Cognitive Burden Scale (ACB), a clinical decision support tool designed to help healthcare professionals assess a patient's anticholinergic burden—the cumulative effect of taking one or more medications with anticholinergic properties.



Scan to Access This Material

EHR RESOURCES

Patient List Report

Download this three-page resource to access a guide on creating a Patient List Report in the EHR to identify patients with a TD diagnosis receiving anticholinergic treatment.

Creating a Patient List Report to Identify Potentially Inappropriate Anticholinergic Use for the Treatment of TD

Clinical guidelines for tardive dyskinesia (TD) recommend the use of vesicular monoamine transporter 2 (VMAT2) inhibitors.[1,2] These guidelines also state that anticholinergics (eg, benztropine), which are used to treat some types of drug-induced movement disorders, are not appropriate as TD treatment because they do not alleviate the symptoms of TD and, in some instances, may aggravate them.[3] Despite this, anticholinergics are often inappropriately used for TD, posing unnecessary risks to patients.[4]

This guide is designed to assist your team in generating a report within your Electronic Health Record (EHR) system—regardless of vendor—to identify patients who:

1. Have a diagnosis of TD

2. Are currently prescribed anticholinergic medications

3. Are not prescribed a VMAT2 inhibitor

4. Do not have another clinical condition that would justify anticholinergic use

This list should support targeted deprescribing efforts, given that anticholinergics are not recommended for the treatment of TD.[1,2]

To Create the Patient List Report in Your EHR:

1. Identify the Target Population

- Access the patient information database. Exclude deceased patients from the query
- Include patients with a diagnosis of tardive dyskinesia, using the following ICD-10 code: G24.01- Drug induced subacute dyskinesia (tardive dyskinesia)
- Consider broadening your query to include patients with other movement disorders, as TD may have been misdiagnosed or miscoded (refer to Appendix A)

2. Create the Report Columns

Configure the report to include the following columns, as available in your EHR system:

- Medical Record Number (MRN)
- VMAT2i Medication currently prescribed (refer to Appendix B)
- Anticholinergic Medication(s) currently prescribed (refer to Appendix C)
- TD Diagnosis (presence of G24.01 or related codes)
- Relevant Non-TD Diagnoses that may justify anticholinergic use (refer to Appendix D)

Consider additional columns for analysis and clinical action:

- Provider Name, Location, Phone Number
- Patient Name, Sex, Age, Race

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Alerts

Download this two-page resource to create two alerts that can be integrated into your EHR to: (1) notify clinicians when attempting to prescribe anticholinergic therapy for the treatment of TD; and (2) notify clinicians when a patient with an active TD diagnosis is receiving anticholinergic medication without an underlying diagnosis to support proper anticholinergic treatment.

Leveraging the EHR to Reduce the Inappropriate Use of Anticholinergics for the Treatment of TD

Clinical guidelines for tardive dyskinesia (TD) recommend the use of vesicular monoamine transporter 2 (VMAT2) inhibitors.[1,2] These guidelines also state that anticholinergics (eg, benztropine) are not appropriate as TD treatment because they do not alleviate the symptoms of TD and, in some instances, may aggravate them.[3] Despite this, anticholinergics are often inappropriately used for TD, posing unnecessary burden to patients.[4]

In an effort to reduce the inappropriate use of anticholinergics as a treatment for TD within your organization, consider implementing an alert such as the two below, which can be integrated into your electronic health record (EHR) to: (1) notify clinicians when attempting to prescribe anticholinergic therapy for the treatment of TD; and (2) notify clinicians when a patient with an active TD diagnosis is receiving anticholinergic medication without an underlying diagnosis to support proper anticholinergic treatment.

Alert 1: Alerting Clinicians When They Attempt to Prescribe Anticholinergic Therapy for the Treatment of TD

Alert Logic

1. The patient has an active diagnosis of **Drug-induced subacute dyskinesia (tardive dyskinesia), G24.01**

   AND
2. The provider is attempting to place an order for **anticholinergic therapy** (refer to Appendix A)

   AND
3. The patient **IS NOT** currently prescribed **VMAT2 inhibitor therapy** (refer to Appendix B)

   AND
4. The patient **DOES NOT** have a diagnosis that may indicate appropriate use of anticholinergic therapy (refer to Appendix C)

Alert 2: Alerting Clinicians When a Patient Diagnosed With TD Is Already Prescribed Anticholinergic for the Treatment of Their TD

Alert Logic

1. The patient has an active diagnosis of **Drug-induced subacute dyskinesia (tardive dyskinesia), G24.01**

   AND
2. The patient has an active medication for **anticholinergic therapy** (refer to Appendix A)

   AND
3. The patient **IS NOT** currently prescribed **VMAT2 inhibitor therapy** (refer to Appendix B)

   AND
4. The patient **DOES NOT** have a diagnosis that may indicate appropriate use of anticholinergic therapy (refer to Appendix C)

Alert Notifications: For both Alert 1 and 2, consider drafting notification messages that underscore the importance of using appropriate treatment guidelines for TD, noting that anticholinergics are not recommended. Consider including a link to the 2020 APA guidelines for clinician reference.

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