Proposed New Measure for HEDIS®[1] MY 2022: Deprescribing of Benzodiazepines in Older Adults (DBO)

NCQA seeks comments on a proposed new measure for inclusion in HEDIS Measurement Year 2022.

Deprescribing of Benzodiazepines in Older Adults: The percentage of Medicare members 65 years of age and older who were dispensed benzodiazepines and experienced a decrease in benzodiazepine dose during the measurement year. Three rates are reported:

- ≥*10% Reduction:* The percentage of members who achieved a 10% decrease in average diazepam milligram equivalent daily benzodiazepine dosage or greater.
- ≥*25% Reduction:* The percentage of members who achieved a 25% decrease in average diazepam milligram equivalent daily benzodiazepine dosage or greater.
- ≥*50% Reduction:* The percentage of members who achieved a 50% decrease in average diazepam milligram equivalent daily benzodiazepine dosage or greater.

The 2019 American Geriatrics Society Beers Criteria recommends benzodiazepines be avoided in all older adults due to risk of cognitive impairment, delirium, falls, fractures and motor vehicle crashes.[2] Given the risks and high utilization of benzodiazepines among older adults,[3] it is important to reduce benzodiazepine use through appropriate "deprescribing," which is the process of tapering or stopping drugs to improve patient outcomes. For benzodiazepines, it is important to slowly decrease dosages, to minimize withdrawal symptoms such as insomnia, anxiety, restlessness and seizures. The deprescribing concept is a potential companion to the existing HEDIS *Use of High-Risk Medications in Older Adults (DAE)* measure, which assesses potentially inappropriate use of benzodiazepines in the Medicare population, to help transition members already continuously using benzodiazepines off them.

A measure on benzodiazepine deprescribing aims to assess and ensure appropriate and safe tapering for patients with inappropriate and routine use. To facilitate consistent calculation of dose reduction, plans will convert dosage units into the diazepam milligram equivalent daily dose. The measure provides a minimum 8-week and maximum 11-month taper period to look for a reduction in benzodiazepine dose, dependent on timing of a member's initial benzodiazepine fill in the measurement year. Members in hospice, receiving palliative care or with an appropriate diagnosis for benzodiazepine use as outlined in the Beers Criteria recommendations (i.e., seizure disorders, rapid eye movement sleep disorder, benzodiazepine withdrawal and ethanol withdrawal) are excluded from the measure. Rates will be stratified by generalized anxiety disorder (GAD) diagnosis because patients with GAD may require separate management or have reasons to continue therapy, putting them on a unique deprescribing trajectory from the general population.

Testing revealed that deprescribing efforts can be feasibly reported at the health plan level using "proportion of days covered" methodology to identify routine benzodiazepine users. On average, approximately 11% of members without GAD and 14% of members with GAD achieved ≥10% dose reduction. Roughly 10% of members without GAD and 12% of members with GAD had evidence of ≥25% dose reduction. Approximately 7% of members without GAD and 8% of members with GAD achieved ≥50% dose reduction. These rates are not mutually exclusive; the 50% indicator includes those who achieved ≥10% and ≥25% reduction.

[1] HEDIS® is a registered trademark of the National Committee for Quality Assurance (NCQA).
[2] American Geriatrics Society. 2019. "American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults." *Journal of the American Geriatrics Society 67* (4): 674–94.
[3] Maust, Donovan T., A. Lin Lewei, and Frederic C. Blow. 2018. "Benzodiazepine Use and Misuse Among Adults in the United States." *Psychiatric Services 70* (2): 97–106.

Overall, rates for the GAD strata were higher than those for the non-GAD strata, confirming expert feedback and evidence that members with GAD can benefit from deprescribing and the need to monitor through separate stratification.[4,5] There was wide variation in performance across health plans for all three indicators and across stratifications, suggesting a gap in care and significant room for improvement.

NCQA expert panels support the proposed measure as specified and agree that the measure addresses an important gap in care.

Supporting documents include the draft measure specifications and evidence workup.

NCQA acknowledges the contributions of the Behavioral Health, Geriatric and Technical Measurement Advisory Panels, the Care Coordination Work Group and the Pharmacy Panel.

[4] Birk, L. 2004. "Pharmacotherapy for Performance Anxiety Disorders: Occasionally Useful but Typically Contraindicated." *J Clin Psychol 60*(8):867–79.

[5] Paquin, A.M., K. Zimmerman, & J.L. Rudolph. 2014. "Risk versus Risk: A Review of Benzodiazepine Reduction in Older Adults. *Expert Opinion on Drug Safety 13*(7), 919–34. https://doi.org/10.1517/14740338.2014.925444

Deprescribing of Benzodiazepines in Older Adults (DBO)

SUMMARY OF CHANGES TO HEDIS MY 2022

- First-year measure.

Description

The percentage of Medicare members 67 years of age and older who were dispensed benzodiazepines and experienced a decrease in benzodiazepine dose (diazepam milligram equivalent dose [DME]) during the measurement year. Three rates are reported.

- ≥*10% Reduction:* The percentage of members who achieved a 10% decrease in average DME daily benzodiazepine dosage or greater.
- ≥*25% Reduction:* The percentage of members who achieved a 25% decrease in average DME daily benzodiazepine dosage or greater.
- ≥*50% Reduction:* The percentage of members who achieved a 50% decrease in average DME daily benzodiazepine dosage or greater.

Definitions

Calculating number of days covered

Use the following steps to identify and calculate covered days.

Step 1 Identify dispensing events where multiple prescriptions for the same medication are dispensed with overlapping days supply (i.e., dispensed on the same day *or* dispensed on different days with overlapping days supply). Sum the days supply for these dispensing events.

Identify the start and end dates: The start date is the date of service of the earliest dispensing event and the end date is the start date plus the summed days supply minus one. The start date through the end date are considered covered days. For example:

- If there are three 7-day supply dispensing events for the same medication on January 1, the start date is January 1 and the end date is January 21. Covered days include January 1-21.
- If there are two 7-day supply dispensing events for the same medication on January 1 and January 5, the start date is January 1 and the end date is January 14. Covered days include January 1-14.
- If there are three 7-day supply dispensing events for the same medication on January 1, a 7-day supply dispensing event on January 20, and a 7-day supply dispensing event on January 28, the start date is January 1 and the end date is February 4. Covered days include January 1 – February 4.

Note: *This step assumes that the member will take one prescription at a time (and start taking the next prescription after exhausting the previous prescription).*

Step 2 For all other dispensing events (multiple prescriptions for the same medication on different days without overlap, multiple prescriptions for different medications on the same or different days, with or without overlap), identify the start and end dates for each dispensing event individually. The start date through the end date are considered covered days.

Note: *This step assumes the member will take the different medications concurrently.*

Step 3 Count the covered days. Consider each calendar day covered by one or more medications to be one covered day.

Identifying same or different drugs To identify same or different drugs, use the medication lists specified for the measure in the Oral Benzodiazepine Medications table below. The table includes a "Medication Lists" column that identifies the "same" medications by grouping them on the same row. For example, all medications listed in the Alprazolam row in the Oral Benzodiazepine Medications table are considered the "same" medication.

ITE Index treatment episode. The ITE is the first 30 covered days, with no gaps allowed, of a benzodiazepine prescription occurring during January 1 and October 1 of the measurement year. The ITE start date is the date of the earliest benzodiazepine prescription dispense date between January 1 and October 1 of the measurement year that is followed by ≥29 consecutive covered days with no gaps. The end date is the start date plus 29 days.

Note: *The ITE may comprise multiple dispensing events, as long as there is no gap in covered days between prescriptions.*

DME Diazepam milligram equivalent. The dose of oral diazepam that is the equivalent of a given dose of another benzodiazepine (refer to the Oral Benzodiazepine Medications table for conversion factors).

Benzodiazepine Dosage Units For each dispensing event, use the following calculation to determine the Benzodiazepine Dosage Units per day.

# of Benzodiazepine Dosage Units per day =

(benzodiazepine quantity dispensed) / (benzodiazepine days supply)

DME Daily Dose For each dispensing event, use the following calculation to determine the DME Daily Dose. Convert each medication into the DME using the appropriate DME conversion factor and strength associated with the benzodiazepine product of the dispensing event (refer to the Oral Benzodiazepine Medications table below for DME conversion factor and strength).

DME Daily Dose = (# of benzodiazepine dosage units) X (strength [e.g., mg, mcg]) X (DME conversion factor [refer to the Oral Benzodiazepine Medications table]).

Average Starting DME The average DME daily dose for all benzodiazepines dispensed during the ITE.

Calculate the DME Daily Dose for each dispensing event in the ITE. To calculate average starting DME, multiply the dispensing event's DME Daily Dose by its days supply, then divide by 30 (the length of the ITE). If multiple dispensing events contribute to the ITE, multiply the days supply of each dispensing event by the corresponding DME Daily Dose and sum the products. Count days supply until the end of the ITE; the total number of days supply across all dispensing events should not exceed 30. Do not round when calculating average daily dose.

Example A ITE with a single dispensing event: A prescription for a 45-days supply of lorazepam containing 40 pills, 2.5 mg each pill. The Benzodiazepine Dosage Unit is 0.8889. The DME Daily Dose is 0.4445. The average starting DME is (0.4445 * 45) / 30 = 0.67.

Example B ITE with multiple consecutive dispensing events: The first dispensing event in the ITE is a 7-days supply of diazepam containing 7 pills, 2 mg each pill. The second dispensing event in the ITE is a 60-days supply of diazepam containing 30 pills, 10mg each pill. The Benzodiazepine Dosage Unit for the first dispensing event is 1 and the DME Daily Dose is 2. The Benzodiazepine Dosage Unit for the second dispensing event is 0.5 and the DME Daily Dose is 5. The average starting DME is: [(2 * 7) + (5 * 23)] / 30 = 4.3.

Treatment Period The period beginning the day after the ITE end date through the final covered day in the measurement year.

Ending DME The DME daily dose for the final dispensing event(s) of the measurement year.

For overlapping dispensing events, use the last covered day of the Treatment Period to calculate the Ending DME.

PDC Proportion of days covered. The number of days a member is covered by at least one benzodiazepine medication prescription, divided by the number of days in the treatment period.

Eligible Population

Product line Medicare.

Stratification Report the following two stratifications and a total for each of the three indicators:

- Members with a diagnosis of generalized anxiety disorder (Generalized Anxiety Disorder Value Set) on or between January 1 of the year prior to the measurement year and the start of the ITE.
- Members without a diagnosis of generalized anxiety disorder (Generalized Anxiety Disorder Value Set) on or between January 1 of the year prior to the measurement year and the start of the ITE.
- Total.

Note: *The stratifications are mutually exclusive and the sum of both stratifications is the Total population.*

Age 67 years and older as of December 31 of the measurement year.

Continuous enrollment The measurement year and the year prior to the measurement year.

Allowable gap No gaps in enrollment.

Anchor date None.

Benefits Medical and pharmacy.

Event/diagnosis Follow the steps below to identify the eligible population.

Step 1 Identify members with two or more benzodiazepine dispensing events on different dates of service (refer to the Oral Benzodiazepine Medications table below for medication lists for identifying benzodiazepine dispensing events) during the measurement year.

Step 2 Of the members identified in step 1, identify those with a qualifying ITE.

Step 3 Of the members identified in step 2, identify those with continuous days covered during the measurement year as defined by PDC ≥50% during the Treatment Period.

Step 4: Required exclusions Of the members identified in step 3, exclude those members who met any of the following criteria:

- Members with a diagnosis of seizure disorders (Seizure Disorders Value Set); rapid eye movement sleep behavior disorder (REM Sleep Behavior Disorder Value Set); benzodiazepine withdrawal (Benzodiazepine Withdrawal Value Set); or ethanol withdrawal (Alcohol Withdrawal Value Set) on or between January 1 of the year prior to the measurement year and the start of the ITE.
- Members receiving hospice care (Refer to *General Guideline 17: Members in Hospice*).
- Members receiving palliative care (Palliative Care Assessment Value Set; Palliative Care Encounter Value Set; Palliative Care Intervention Value Set) during the measurement year.

Administrative Specification

Denominator The eligible population.

Numerators The percentage of members who achieved a 10%, 25%, or 50% decrease in DME daily benzodiazepine dosage or greater. Follow the steps below to identify numerator compliance.

Step 1 Identify the Average Starting DME:

1. Identify the ITE.
2. Calculate starting benzodiazepine dosage unit during the ITE.
3. Calculate average starting DME daily dose.

Step 2 Identify the Ending DME:

1. Identify the final benzodiazepine dispensing event during the measurement year.
2. Calculate ending benzodiazepine dosage unit for the final dispensing event.
3. Calculate ending DME daily dose.

Step 3 Calculate the percentage change between the Average Starting DME and the Ending DME using the formula below.

[(Average Starting –Ending) / Average Starting Dose] x 100

Step 4 Determine numerator compliance.

- *If the member's percent reduction is ≥10%,* the member is numerator compliant for the 10% Reduction Rate.
- *If the member's percent reduction is ≥25%,* the member is numerator compliant for the 25% Reduction Rate.
- *If the member's percent reduction is ≥50%,* the member is numerator compliant for the 50% Reduction Rate.

Note: *Rates are not mutually exclusive. Members should be included in all numerators for which they are numerator compliant. For example, if a member achieved a 35% reduction, they would be numerator compliant for both 10% and 25% Reduction Rates.*

Oral Benzodiazepine Medications

Type of Benzodiazepine	Medication Lists*	Strength	DME Conversion Factor
Alprazolam (oral)	TBD	TBD	0.1
Chlordiazepoxide (oral)	TBD	TBD	2.5
Clonazepam (oral)	TBD	TBD	0.1
Clorazepate (oral)	TBD	TBD	1.5
Diazepam (oral)	TBD	TBD	1
Estazolam (oral)	TBD	TBD	0.3
Flurazepam (oral)	TBD	TBD	3
Lorazepam (oral)	TBD	TBD	0.2
Midazolam (oral)	TBD	TBD	1.5
Oxazepam (oral)	TBD	TBD	3
Quazepam (oral)	TBD	TBD	2
Temazepam (oral)	TBD	TBD	2
Triazolam (oral)	TBD	TBD	0.025

* Medication lists will be separated by strength using a similar methodology as the existing HEDIS *Use of Opioids at High Dosage* measure.

Note

- *Include denied claims when identifying the eligible population and assessing the numerator.*
- *Do not include supplemental data when identifying the eligible population or assessing the numerator. Supplemental data can be used for only required exclusions for this measure.*
- *Medication lists used for this measure contain any applicable combination products.*

Data Elements for Reporting

Organizations that submit HEDIS data to NCQA must provide the following data elements.

Table DBO-3: Data Elements for Deprescribing of Benzodiazepines in Older Adults

	Administrative
Measurement year	✓
Eligible population	*For each stratification and total*
Number of required exclusions	*For each stratification and total*
Numerator events by administrative data	*Each of the 3 rates, for each stratification and total*
Reported rate	*Each of the 3 rates, for each stratification and total*

Deprescribing of Benzodiazepines in Older Adults (DBO)

Measure Workup

Executive Summary

This workup advances patient-safety measure development by summarizing evidence from literature review and stakeholder interviews for a new measure concept: *Deprescribing of Benzodiazepines in Older Adults.* This measure will apply to the Medicare Advantage population 65 years of age and older and assesses the percentage of members prescribed benzodiazepines who experienced a decrease in benzodiazepine dose during the measurement period.

There is growing concern about the use of benzodiazepines in older adults. Benzodiazepines are one of several medications recommended in the 2019 AGS Beers Criteria to be avoided in all older adults. Beginning in HEDIS Measurement Year 2020, a new rate was added to the *Use of High-Risk Medications in Older Adults (DAE)* measure assessing benzodiazepine use without an appropriate diagnosis. This new measure concept will ensure appropriate and safe tapering of benzodiazepines for inappropriate users referenced in the DAE measure.

Topic Overview

Prevalence of Benzodiazepine Use and Prescribing

Use of prescription medications and concurrent use of interacting medications have significantly increased over time, especially in the older adult population (Kantor et al., 2015; Qato et al., 2016). In older adults, certain medications, including benzodiazepines, pose significant risks to patients and are considered potentially inappropriate for this population. Older adults are prescribed benzodiazepines at the highest rate and are most at risk of adverse events among all U.S. adults (Guina & Merrill, 2018; D. T. Maust et al., 2018).

Between 1996 and 2013, the number of adults filling a benzodiazepine prescription in the U.S. increased from 8 million to nearly 14 million. The amount of benzodiazepine medicine found in prescriptions also doubled over this period (Bachhuber et al., 2016). Evidence suggests that in the older adult population, benzodiazepine users are more likely to be female, have a low level of education, have a lower income and have several chronic physical diseases (Baandrup et al., 2018).

In 2015, CMS reported that 17.6% of all Medicare Part D enrollees were dispensed benzodiazepines (Centers for Medicare & Medicaid Services [CMS], 2016). After the expansion of Medicare coverage for prescription benzodiazepines in 2013, the prevalence of benzodiazepine use increased (D. Maust et al., 2019; Zimlich, 2016). This increase in prevalence was found to have potentially contributed to both an increase in fall-related injuries and an increase in medication poisoning among older adults (D. Maust et al., 2019).

Risks of Benzodiazepine Use

Benzodiazepines such as alprazolam are indicated for anxiety and panic disorders (Food and Drug Administration [FDA], 2011). When prescribed at a low dosage for a brief time (less than 30 days), benzodiazepines can effectively treat generalized anxiety disorders, panic disorders and sleep disorders (Dell'osso & Lader, 2013; Salzman, 1991; Vinkers & Olivier, 2012). They are also used for anesthesia and to treat alcohol or benzodiazepine withdrawal, seizures and insomnia (Greller & Gupta, 2017; Guina & Merrill, 2018). However, the use of benzodiazepines in older adults is associated with serious risks.

Benzodiazepines have class-level warnings for users that include dependence and withdrawal reactions, such as seizures, central nervous system depression and impaired performance (FDA, 2011). Benzodiazepines induce sedation, which causes drowsiness, delayed reaction times and impaired balance (Donnelly et al., 2017). This can result in increased risk of hip fractures, falls and fall-related injuries in older adults prescribed short- and long-acting benzodiazepines (Bakken et al., 2014; de Vries et al., 2013; Donnelly et al., 2017; Woolcott et al., 2009; Xing et al., 2014). Although benzodiazepines are indicated for short-term treatment of generalized anxiety disorder (Davidson, 2001; Gorman, 2003; Lydiard et al., 2010), there is risk of continued long-term use in older adults, as many chronic users are rarely encouraged to discontinue the medication (Paquin et al., 2014; Sivertsen et al., 2006).

Studies have found that long-term use of benzodiazepines in older adults is associated with increased risk of dementia (He et al., 2019; Shash et al., 2016; Takada et al., 2016; Zhong et al., 2015). Other harms related to benzodiazepine use include impaired cognition, loss of physical function, depressed mood and suicidal thoughts (Baandrup et al., 2018; Blanco et al., 2018; Greller & Gupta, 2017). Research suggests that benzodiazepines may reduce the efficacy of cognitive behavior therapy in treating anxiety disorders, and experts encourage use of safer treatment alternatives, including serotonin reuptake inhibitor and cognitive behavioral therapy, in the older adult population (Birk 2004; Rothbaum et al., 2014). Benzodiazepines are also known to interact with other medications such as opioids and other sedatives, which may result in an increased risk of opioid-related overdose or death (Hernandez et al., 2018; National Institute on Drug Abuse, 2019). Overdose deaths involving benzodiazepines rose from 1,135 in 1999 to more than 11,537 in 2017, driven by the combination of a benzodiazepine with an opioid (National Institute on Drug Abuse, 2019).

Despite the risks associated with benzodiazepines, these medications are inappropriately prescribed and overused in the older adult population. Since 2003, the use of benzodiazepines in ambulatory care has increased, including co-prescribing with other sedating medications. Evidence shows increased prescribing among primary care physicians in particular, and for conditions other than insomnia and anxiety, such as back and chronic pain (Agarwal & Landon, 2019). Many older patients take benzodiazepines for sleep (Garfinkel & Mangin, 2010). One study found that older adults are more likely to disclose misusing benzodiazepines to help with sleep than younger adults (D. T. Maust et al., 2018). Benzodiazepines are also widely used for long-term treatment of anxiety disorders, although prescribing guidelines recommend benzodiazepine treatment for short-term treatment only, after effective and safer drug alternatives have failed (Canadian Psychiatric Association, 2006; National Institute for Health and Care Excellence, 2011; Paquin et al., 2014).

Financial Impact of Benzodiazepine Use

Use of benzodiazepines is associated with higher health care service use and costs. In 2008, there were about 272,000 emergency department (ED) visits in the U.S. involving nonmedical use of benzodiazepines; in 2011, this increased to approximately 426,000 ED visits (Substance Abuse and Mental Health Services Administration, 2011). As one study found, patients with moderate pain prescribed a benzodiazepine were more likely to return to the ED compared to those without a benzodiazepine prescription (Chukwulebe et al., 2019). Individuals susceptible to a benzodiazepine-related drug interaction are at even greater risk of hospitalizations, ED visits, outpatient visits and other higher health care costs (Dionne et al., 2013).

Among all potentially inappropriate medications, benzodiazepines were identified as the third largest medication class contributing to total medication costs of older adults living in residential care, following proton-pump inhibitors and antipsychotics (Harrison et al., 2018). Literature suggests there is increased risk of falls in older adults taking benzodiazepines (Donnelly et al., 2017). According to the Centers for Disease Control and Prevention (CDC), falls among older adults are very costly. Each year, the U.S. spends about $50 billion on non-fatal fall injuries and $754 million on fatal falls. Of the total spent on non-fatal falls, $29 billion is paid by Medicare and $9 billion is paid by Medicaid (CDC, 2019). It is unknown what percentage of falls are attributed to benzodiazepine use, but as the older population grows, it is expected that the number of fall injuries and cost to treat these injuries will also rise (CDC, 2019).

Clinical Recommendations Against Benzodiazepine Use in Older Adults

Given the risks and high prevalence, multiple sources of clinical or other guidance recommend against benzodiazepine use in older adults.

American Geriatrics Society Beers Criteria®

The American Geriatrics Society (AGS) Beers Criteria® (AGS Beers Criteria®) for Potentially Inappropriate Medication (PIM) Use in Older Adults is an explicit list of PIMs that are typically best avoided by older adults in most circumstances or under specific situations, such as in certain diseases or conditions (American Geriatrics Society, 2019). The criteria recommend avoiding benzodiazepines—all short-, intermediate-, and long-acting forms—for all older adults. The criteria's rationale states: "Older adults have increased sensitivity to benzodiazepines and decreased metabolism of long-acting agents; in general, all benzodiazepines increase risk of cognitive impairment, delirium, falls, fractures, and motor vehicle crashes in older adults." According to the criteria, only in rare cases may benzodiazepines be appropriate (i.e., for seizure disorders, rapid eye movement sleep behavior disorder, benzodiazepine withdrawal, ethanol withdrawal, severe generalized anxiety disorder and periprocedural anesthesia), most notably for benzodiazepine withdrawal, a particular risk when deprescribing benzodiazepines in older adults.

U.S. Food and Drug Administration Black Box Warning

In August 2016, the FDA issued a black box warning about the potentially deadly combination of benzodiazepines and opioids (FDA, 2016). In September 2017, the FDA updated this advisory to include several recommendations for health care professionals, including educating patients about the serious risks of combined use, even when used as prescribed; tapering the benzodiazepine or CNS depressant to discontinuation, if possible; verifying the diagnosis if a patient is receiving prescribed benzodiazepines or other CNS depressants for anxiety or insomnia and considering other treatment options for these conditions; and coordinating with other prescribers to ensure they are aware of the patient's full medication regimen (FDA, 2017).

The Centers for Disease Control and Prevention (CDC) supports this advisory, issuing their own recommendation in 2018 for prescribers to revise an opioid order when a patient is concurrently prescribed a benzodiazepine medication (Dowell et al., 2016).

STOPP/START Criteria (Version 2)

The STOPP/START criteria for PIM use in older people was originally published in 2008 and updated in 2015 (O'Mahony et al., 2015). Based on expert consensus review of current evidence, the criteria provide a screening tool of older people's prescriptions (STOPP) and a screening tool to alert to the right treatment (START). The criteria have been used to design patient-safety screening interventions and detect patients at risk of preventable medication-related hospital admissions, among other uses (Barenholtz Levy & Marcus, 2016; Hill-Taylor et al., 2013, p.; van der Stelt et al., 2016). A STOPP criteria for benzodiazepines was added in the 2015 (version 2) update.

STOPP CNS criteria D5 recommends that benzodiazepines should not be taken for ≥4 weeks if there is no indication for longer treatment, due to risk of prolonged sedation, confusion, impaired balance, falls and traffic accidents. The guideline continues, "all benzodiazepines should be withdrawn gradually if taken for >2 weeks as there is a risk of causing a benzodiazepine withdrawal syndrome if stopped abruptly."

Deprescribing Benzodiazepines Among Older Adults

Clinical guidelines recommend avoidance of benzodiazepines in older adults. To achieve this, new use should be prevented and current users must be transitioned away from benzodiazepines. Immediate discontinuation of benzodiazepines may lead to adverse events and withdrawal symptoms, such as seizures and insomnia, and is not recommended (Hare, 2019; Markota et al., 2016; Reeve et al., 2017); a deprescribing strategy is needed. Deprescribing is the tapering or stopping drugs with the goal of minimizing inappropriate use to improve patient outcomes (Scott et al., 2015). Closely related to the concept of clinical de-intensification (e.g., Choosing Wisely Campaign), deprescribing specifically addresses the steps needed to safely discontinue a medication while avoiding unintended consequences such as withdrawal or adverse events. This includes consideration of other medications the patient may be taking, as well as discussion with the patient to educate on rationale for deprescribing and discuss patient goals. This approach is recommended in older patients receiving high-risk drugs or combinations and may involve multiple steps or components (Scott et al., 2015).

It is important that benzodiazepines are discontinued at a rate that is appropriate and safe for older adults. Rapid tapers can result in higher anxiety levels than those preceding the use of the medication, and possibly seizures (Markota et al., 2016). However, with patient education and close monitoring, older adults can safely reduce their benzodiazepine use (Iyer et al., 2008). Deprescribing success rates (defined as being complete drug-free at end of study) have been found to range from 25% to 85% (Paquin et al., 2014). A randomized trial found a 77% reduction in benzodiazepine use at 6 months, with minimal withdrawal symptoms among long-term users who received education from community pharmacists during the tapering process (Tannenbaum et al., 2014). Successful tapering decreases the risks of adverse events associated with benzodiazepine use, including risk of falls (Markota et al., 2016).

There are several existing interventions related to decreasing benzodiazepine use. Patient and provider education is a common intervention used to target deprescribing efforts at the individual level (Ng et al., 2018). In addition, reimbursement for alternative services, such as behavioral therapy for insomnia or alternative medications for anxiety, give physicians options for common diagnoses that are typically treated with benzodiazepines (Guina & Merrill, 2018). For example, providers can prescribe antidepressants, anticonvulsants or certain antihypertensive agents to patients treated for generalized anxiety disorder with benzodiazepines (Guina & Merrill, 2018; Longo & Johnson, 2000). Initiatives at the state level can also impact deprescribing efforts. In 2019, 40 states had an active prescriber mandated-use provision in their statute or rule (National Alliance for Model State Drug Laws, 2019); 20 require mandatory use of Prescription Drug Monitoring Program data for benzodiazepines (Centers for Disease Control and Prevention, 2020; Liang & Shi, 2019). New Mexico is on the forefront of statewide benzodiazepine deprescribing efforts. The New Mexico Overdose Prevention and Pain Management Advisory Council, established in 2012 under the NM Department of Health, developed guidelines for the use of benzodiazepines in the state (NM Department of Health, 2018) that include prescribing guidance for benzodiazepines and other Z-drugs, as well as tapering instructions for physicians to follow (The New Mexico Overdose Prevention and Pain Management Advisory Council, 2019).

Recommendations Focused on Reducing Benzodiazepine Use When Already Prescribed & Deprescribing Approaches

Although a single consensus guideline for appropriate deprescribing of benzodiazepines has not yet been published, several clinical algorithms have been produced that share common recommendations (National Opioid Use Guideline Group, 2010; Ogbonna & Lembke, 2017; Pottie et al., 2018; VA National Center for PTSD, 2013). These clinical recommendations are summarized in Table 3. Similar guidance is also reflected in various organization-specific guidelines, such as Kaiser of Washington’s Benzodiazepine and Z-Drug Safety Guideline, among others (Kaiser Permanente, 2019; Nebraska Hospital Association, n.d.).

Table 3: **Benzodiazepine Deprescribing Approaches Focused on, or Applicable to, Older Adults**

Recommendation	Target Population	Guidance	Short Citation
Deprescribing Guidelines in the Elderly Project	Adults ≥65 with any benzodiazepine use for treatment of insomnia	Reduce 25% every 2 weeks, switching to 12.5% reductions near end	Pottie et al., 2018
VA National Center for Post-Traumatic Stress Disorder	Patients with PTSD on benzodiazepines >2 weeks	1. Switch high-dose or long-term users to long-acting benzodiazepine 2. Reduce 50% in first 2-4 weeks, maintain 1-2 months, then reduce 25% every 2 weeks	VA National Center for PTSD, 2013
AAFP Curbside Consultation	Adults ≥65 on benzodiazepines >1 month	Initial reduction 5-25%, followed by further 5-25% reduction every 1-4 weeks	Ogbonna and Lembke, 2017
NOUGG Canadian Guideline for Chronic Non-Cancer Pain	Unspecified	Reduce by 10% every 1-2 weeks until dose is at 20% of original, then taper 5% every 2-4 weeks	National Opioid Use Guideline Group, 2010

Most guidelines for older adults (aged 65 and older) recommend starting with a larger taper amount (between 20% and 25%) every 2–4 weeks, then taper by 5% to 12.5%. Overall, there is agreement that a slower taper is considered better, with a possibility of lasting anywhere from 6–8 months. Most guidelines identify and prioritize specific high-risk populations such as individuals on supratherapeutic doses, using multiple benzodiazepines, or with drug-drug or drug-disease interactions. In almost all guidelines, the older adult population is called out as a specific risk group, with tailored recommendations (Ogbonna & Lembke, 2017; Pottie et al., 2018; VA National Center for PTSD, 2013).

The level of evidence supporting most existing benzodiazepine deprescribing guidelines is unclear; however, “Deprescribing benzodiazepine receptor agonists: Evidence based clinical practice guideline,” was developed based on systematic review under the GRADE framework (Pottie et al., 2018). Recommendations are specific to older adults using benzodiazepines for insomnia and do not apply to use of benzodiazepines for untreated anxiety, depression or other physical or mental health conditions. Created under the *Deprescribing Guidelines in the Elderly* project and published in 2018, this guideline’s recommendations have been adopted or promoted by multiple clinical organizations, such as the American Academy of Family Physicians and College of Physicians & Surgeons of Alberta (College of Physicians & Surgeons of Alberta, 2016; Ogbonna & Lembke, 2017). Their recommendations generally agree with those of other guidelines, though specific details may vary depending on the particular clinical population under discussion.

Considerations for Measurement

There is growing need for a measure targeting safe tapering of inappropriate medications. As NCQA works to address this gap in measurement, there are several challenges and opportunities to consider throughout the measure development process.

Challenges and Opportunities

One challenge identified in the literature is provider and patient pushback. Providers and patients may be uncertain of the benefits and harms of continuing or discontinuing specific drugs (Scott et al., 2015). The uncertainty may be greater in cases where there is not a single guideline or recommendation in place to advise on appropriate deprescribing of specific medications, such as benzodiazepines. Patients may also fear the adverse drug withdrawal effects and decide not to taper off benzodiazepines to avoid these effects (Scott et al., 2015). Limited availability or reimbursement opportunities for alternative treatments may discourage patients and providers from reducing use of benzodiazepines.

NCQA is aware of potential unintended consequences a deprescribing measure can have. If not specified properly, this measure could incentivize inappropriate deprescribing that could result in attendant harm to the patient. In testing, NCQA explored populations where it may not be fitting to deprescribe benzodiazepines and should be excluded from the measure, such as those with a diagnosis that may be appropriate for benzodiazepine treatment. The current measure specifications reflect our findings and exclude populations where benzodiazepine use may be appropriate. Another possible consequence of a deprescribing measure is patients turning to other methods to obtain benzodiazepine prescriptions; for example, paying for benzodiazepines out of pocket (Barnett et al., 2019).

With a deprescribing measure, there is opportunity to promote harm reduction. This measure concept will also fill a measurement gap. Currently, measures on benzodiazepine use focus on avoiding all use of benzodiazepines, or avoiding use of benzodiazepines concurrently with other medications, such as opioids. Other existing measures assess the education patients and caregivers receive on high-risk medications and overall polypharmacy of CNS-active medications. Although there is no current measure that incentivizes safely getting older adults off benzodiazepines, there is documented success of reducing benzodiazepine use at the population level (Carr et al., 2019; Davidson et al., 2020; Reeve et al., 2017; Winstanley et al., 2018), and a measure will further the assessment of such progress in patient safety for older adults.

Stakeholder Interviews

To better understand the process of deprescribing in the real world, NCQA conducted interviews with individuals from six stakeholder groups over the course of 6 months. Participants included health care providers, clinical pharmacists and MA and commercial health plans. The interviews lasted 30–60 minutes and were conducted by phone. Prior to the call, NCQA provided interviewees with information about the context of the discussion. All interviews were unstructured, allowing interviewees to offer in-depth information and opinions.

Overall, the discussions reaffirmed literature findings on rising prevalence of benzodiazepine use in older adults and the need for safe and appropriate tapering methods. Stakeholders were also provided an opportunity to communicate support and concerns around measure development focused on deprescribing of benzodiazepines in the older adult population. The section below is a summary of our interview findings.

Stakeholder Interview Findings

Stakeholders supported a new measure concept on deprescribing of benzodiazepines and shared ideas on how to specify such a measure. They agreed that a deprescribing measure should require very small decreases in medication dose over months (e.g., 6 months) rather than incentivize completely stopping benzodiazepine use. One provider mentioned that in addition to decreasing dose, it is important to consider the type of benzodiazepine (e.g., certain benzodiazepines are metabolized differently, with some taking longer or more complicated routes for the body to fully process than others). A couple of stakeholders suggested that in instances where deprescribing did not happen, justification for the current dose in the medical record could be an alternative method of ensuring appropriate medication management. Stakeholders also shared potential populations of focus for deprescribing efforts, including inappropriate users (i.e., without an indicated diagnosis), long-term users and users treated for generalized anxiety disorder. A few recommended excluding those with advanced illness and frailty from the measure.

Stakeholders identified a few challenges and unintended consequences NCQA should be aware of throughout development of a deprescribing measure. First, there may be pushback from patients who are long-term users of benzodiazepines, particularly older adults. Patients may experience or may fear adverse withdrawal effects and decide not to taper. Patients may also simply stop seeing their doctors and “doctor shop” to obtain prescriptions outside the plan network and pay out of pocket for benzodiazepines, circumventing their health plan’s approval, as they are relatively inexpensive medications to acquire.

Stakeholders also shared concern over provider pushback. Providers may not feel confident in their ability to safely taper without a firm or widely adopted guideline to reference for benzodiazepine deprescribing or given a patient's medical history. Limited alternative treatments for the conditions indicated for benzodiazepine use and access challenges may also prevent providers from trying to deprescribe the drugs. Additionally, it is difficult to tackle benzodiazepine use through case management without placing a restriction on the drug. Benzodiazepines are considered a protected medication class by Medicare due to their indication for treatment of seizures (anti-convulsant). This limits the ability of health plans to implement certain medication therapy management strategies such as formulary edits to intervene on benzodiazepine use (CMS, 2019). Despite the challenges, it is feasible for health plans to address the gap in quality care. One stakeholder NCQA spoke with, a Medicaid and commercial pharmacy benefit program, shared that it has developed a benzodiazepine initiative targeting dose reduction and achieved about a 20% success rate in the target population in 2019.

Stakeholders recognized that current quality improvement efforts are focused on reducing opioid-benzodiazepine co-prescribing and polypharmacy, but they emphasized a deprescribing measure could be complementary and promote good care as well as improve patient safety in general, and encouraged alignment with related measures and state guidelines in the measure's development.

References

Agarwal, S.D., & B.E. Landon. 2019. "Patterns in Outpatient Benzodiazepine Prescribing in the United States." *JAMA Network Open 2*(1), e187399–e187399. https://doi.org/10.1001/jamanetworkopen.2018.7399

American Geriatrics Society. 2019. American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults. *Journal of the American Geriatrics Society 67*(4), 674–694. https://doi.org/10.1111/jgs.15767

Baandrup, L., B.H. Ebdrup, J.Ø. Rasmussen, J. Lindschou, C. Gluud, & B.Y. Glenthøj. 2018. "Pharmacological Interventions for Benzodiazepine Discontinuation in Chronic Benzodiazepine Users." *Cochrane Database of Systematic Reviews*, *3*. https://doi.org/10.1002/14651858.CD011481.pub2

Bachhuber, M.A., S. Hennessy, C.O. Cunningham, & J.L. Starrels. 2016. "Increasing Benzodiazepine Prescriptions and Overdose Mortality in the United States, 1996–2013." *American Journal of Public Health 106*(4), 686–688. https://doi.org/10.2105/AJPH.2016.303061

Bakken, M.S., A. Engeland, L.B. Engesæter, A.H. Ranhoff, S. Hunskaar, & S. Ruths. 2014. "Risk of Hip Fracture Among Older People Using Anxiolytic and Hypnotic Drugs: A Nationwide Prospective Cohort Study." *European Journal of Clinical Pharmacology 70*(7), 873–880. https://doi.org/10.1007/s00228-014-1684-z

Barenholtz Levy, H., & E.-L. Marcus. 2016. "Potentially Inappropriate Medications in Older Adults: Why the Revised Criteria Matter." *The Annals of Pharmacotherapy 50*(7), 599–603. https://doi.org/10.1177/1060028016642455

Barnett, M.L., T.R. Hicks, & A.B. Jena. 2019. "Prescription Patterns of Family Members After Discontinued Opioid or Benzodiazepine Therapy of Users." *JAMA Internal Medicine* https://doi.org/10.1001/jamainternmed.2019.1047

Birk, L. 2004. "Pharmacotherapy for Performance Anxiety Disorders: Occasionally Useful but Typically Contraindicated." *J Clin Psychol 60*(8):867–79.

Blanco, C., B. Han, C.M. Jones, K. Johnson, & W.M. Compton. 2018. "Prevalence and Correlates of Benzodiazepine Use, Misuse, and Use Disorders Among Adults in the United States." *The Journal of Clinical Psychiatry 79*(6). https://doi.org/10.4088/JCP.18m12174

Canadian Psychiatric Association. 2006. *Clinical Practice Guidelines: Management of Anxiety Disorders; Generalized Anxiety Disorder*. https://ww1.cpa-apc.org/Publications/CJP/supplements/july2006/anxiety_guidelines_2006.pdf

Carr, F., P. Tian, J. Chow, J. Guzak, J., Triscott, P. Mathura, X. Sun, & B. Dobbs, B. 2019. "Deprescribing Benzodiazepines Among Hospitalised Older Adults: Quality Improvement Initiative." *BMJ Open Quality 8*(3), e000539. https://doi.org/10.1136/bmjoq-2018-000539

Centers for Disease Control and Prevention (CDC). September 17, 2019. *Falls Data | Home and Recreational Safety | CDC Injury Center*. https://www.cdc.gov/homeandrecreationalsafety/falls/fallcost.html

CDC. June 10, 2020. *Prescription Drug Monitoring Programs (PDMPs) | Drug Overdose | CDC Injury Center*. https://www.cdc.gov/drugoverdose/pdmp/states.html

Centers for Medicare & Medicaid Services (CMS). 2016. *Concurrent Use of Opioids and Benzodiazepines in a Medicare Part D Population*. https://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovContra/Downloads/Concurrent-Use-of-Opioids-and-Benzodiazepines-in-a-Medicare-Part-D-Population-CY-2015.pdf

Chukwulebe, S.B., H.S. Kim, D.M. McCarthy, D.M. Courtney, P.M. Lank, S.J. Gravenor, & S.M. Dresden. 2019. "Potentially Inappropriate Medication Prescriptions for Older Adults with Painful Conditions and Association with Return Emergency Department Visits." *Journal of the American Geriatrics Society 67*(4), 719–725. https://doi.org/10.1111/jgs.15722

CMS. 2019. *Medicare Advantage and Part D Drug Pricing Final Rule (CMS-4180-F)*. Centers for Medicare & Medicaid Services. https://www.cms.gov/newsroom/fact-sheets/medicare-advantage-and-part-d-drug-pricing-final-rule-cms-4180-f

College of Physicians & Surgeons of Alberta. 2016. *Benzodiazepines: Use and Taper*. http://www.cpsa.ca/wp-content/uploads/2017/06/Benzodiazepine-Clinical-Toolkit-Use-and-Taper.pdf

Davidson, J.R. 2001. "Pharmacotherapy of Generalized Anxiety Disorder." *The Journal of Clinical Psychiatry*.

Davidson, S., C. Thomson, & G. Prescott, G. 2020. "A Durable Minimal Intervention Strategy to Reduce Benzodiazepine Use in a Primary Care Population." *Korean Journal of Family Medicine 41*(2), 126–132. https://doi.org/10.4082/kjfm.18.0159

de Vries, O.J., G. Peeters, P. Elders, C. Sonnenberg, M. Muller, D.J.H. Deeg, & P. Lips. 2013. "The Elimination Half-Life of Benzodiazepines and Fall Risk: Two Prospective Observational Studies." *Age and Ageing 42*(6), 764–770. https://doi.org/10.1093/ageing/aft089

Dell'osso, B., & M. Lader. 2013. "Do Benzodiazepines Still Deserve a Major Role in the Treatment of Psychiatric Disorders? A Critical Reappraisal." *European Psychiatry 28*(1), 7–20. https://doi.org/10.1016/j.eurpsy.2011.11.003

Dionne, P.-A., H.-M. Vasiliadis, E. Latimer, D. Berbiche, & M. Preville. 2013. "Economic Impact of Inappropriate Benzodiazepine Prescribing and Related Drug Interactions Among Elderly Persons." *Psychiatric Services 64*(4), 331–338. https://doi.org/10.1176/appi.ps.201200089

Donnelly, K., R. Bracchi, J. Hewitt, P.A. Routledge, & B. Carter. 2017. "Benzodiazepines, Z-Drugs and the Risk of Hip Fracture: A Systematic Review and Meta-Analysis." *PLOS ONE 12*(4), e0174730. https://doi.org/10.1371/journal.pone.0174730

Dowell, D., T.M. Haegerich, & R. Chou. 2016. "CDC Guideline for Prescribing Opioids for Chronic Pain—United States, 2016." *MMWR. Recommendations and Reports 65*(1), 1–49. https://doi.org/10.15585/mmwr.rr6501e1

Food and Drug Administration (FDA). 2011. *XANAX Prescription Label*. https://www.accessdata.fda.gov/drugsatfda_docs/label/2011/018276s045lbl.pdf

FDA. 2016. *FDA Drug Safety Communication: FDA Warns About Serious Risks and Death When Combining Opioid Pain or Cough Medicines With Benzodiazepines; Requires Its Strongest Warning*. FDA. https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-warns-about-serious-risks-and-death-when-combining-opioid-pain-or

FDA. 2017. *FDA Drug Safety Communication: FDA Urges Caution About Withholding Opioid Addiction Medications From Patients Taking Benzodiazepines or CNS Depressants: Careful Medication Management Can Reduce Risks*. https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-urges-caution-about-withholding-opioid-addiction-medications

Garfinkel, D., & D. Mangin. 2010. "Feasibility Study of a Systematic Approach for Discontinuation of Multiple Medications in Older Adults: Addressing Polypharmacy." *Archives of Internal Medicine*, *170*(18), 1648–1654. https://doi.org/10.1001/archinternmed.2010.355

Gorman, J.M. 2003. "Treating Generalized Anxiety Disorder." *Journal of Clinical psychiatry 64*(1), 24-29.

Greller, H., & A. Gupta. 2017. "Benzodiazepine Poisoning and Withdrawal." In S. Traub & Grayzel (Eds.), *UpToDate*.

Guina, J., & B. Merrill. 2018. "Benzodiazepines I: Upping the Care on Downers: The Evidence of Risks, Benefits and Alternatives." *Journal of Clinical Medicine 7*(2). https://doi.org/10.3390/jcm7020017

Hare, B. October 4, 2019. "It's Not Just Opioids: What Doctors Want You to Know About Benzos." *CNN*. https://www.cnn.com/2019/10/04/health/benzodiazepines-this-is-life-with-lisa-ling/index.html

Harrison, S.L., L. Kouladjian O'Donnell, R. Milte, S.M. Dyer, E.S. Gnanamanickam, C. Bradley, E. Liu, S.N. Hilmer, & M. Crotty. 2018. "Costs of Potentially Inappropriate Medication Use in Residential Aged Care Facilities." *BMC Geriatrics 18*. https://doi.org/10.1186/s12877-018-0704-8

He, Q., X. Chen, T. Wu, L. Li, & X. Fei. 2019. "Risk of Dementia in Long-Term Benzodiazepine Users: Evidence from a Meta-Analysis of Observational Studies." *Journal of Clinical Neurology (Seoul, Korea) 15*(1), 9–19. https://doi.org/10.3988/jcn.2019.15.1.9

Hernandez, I., M. He, M.M. Brooks, & Y. Zhang. 2018. “Exposure-Response Association Between Concurrent Opioid and Benzodiazepine Use and Risk of Opioid-Related Overdose in Medicare Part D Beneficiaries.” *JAMA Network Open 1*(2). https://doi.org/10.1001/jamanetworkopen.2018.0919

Hill-Taylor, B., I. Sketris, J. Hayden, S. Byrne, D. O’Sullivan, & R. Christie. 2013. “Application of the STOPP/START Criteria: A Systematic Review of the Prevalence of Potentially Inappropriate Prescribing In Older Adults, and Evidence of Clinical, Humanistic and Economic Impact.” *Journal of Clinical Pharmacy and Therapeutics 38*(5), 360–372. https://doi.org/10.1111/jcpt.12059

Iyer, S., V. Naganathan, A.J. McLachlan, & D.G. Le Couteur. 2008. “Medication Withdrawal Trials in People Aged 65 Years and Older: A Systematic Review.” *Drugs & Aging 25*(12), 1021–1031. https://doi.org/10.2165/0002512-200825120-00004.

Kaiser Permanente. 2019. *Benzodiazepine and Z-Drug Safety Guideline* (p. 21). https://wa.kaiserpermanente.org/static/pdf/public/guidelines/benzo-zdrug.pdf

Kantor, E.D., C.D. Rehm, J.S. Haas, A.T. Chan, & E.L. Giovannucci. 2015. “Trends in Prescription Drug Use Among Adults in the United States From 1999–2012.” *JAMA 314*(17), 1818. https://doi.org/10.1001/jama.2015.13766

Kim, P., & S. Weinstein. 2016. “Benzodiazepines.” In *Johns Hopkins Psychiatry Guide*. https://www.hopkinsguides.com/hopkins/.//view/Johns_Hopkins_Psychiatry_Guide/787140/all/Benzodiazepines?refer=true

Liang, D., & Y. Shi. 2019. “Prescription Drug Monitoring Programs and Drug Overdose Deaths Involving Benzodiazepines and Prescription Opioids.” *Drug and Alcohol Review 38*(5), 494–502. https://doi.org/10.1111/dar.12959

Longo, L., & B. Johnson. 2000. “Addiction: Part I. Benzodiazepines—Side Effects, Abuse Risk and Alternatives.” *Am Fam Physician* 61(7), 2121-2128.

Lydiard, R.B., K. Rickels, B. Herman, & D.E. Feltner. 2010. “Comparative Efficacy of Pregabalin and Benzodiazepines in Treating the Psychic and Somatic Symptoms of Generalized Anxiety Disorder.” *International Journal of Neuropsychopharmacology 13*(2), 229-241.

Markota, M., T.A. Rummans, J.M. Bostwick, & M.I. Lapid. 2016. “Benzodiazepine Use in Older Adults: Dangers, Management, and Alternative Therapies.” *Mayo Clinic Proceedings 91*(11), 1632–1639. https://doi.org/10.1016/j.mayocp.2016.07.024

Maust, D., J. Goldstick, R. Fowler, & A. Bohnert. June 2, 2019. *Change in Fall-Related Injury and Overdose after Medicare Part D Coverage of Benzodiazepines Began*. 2019 Annual Research Meeting. https://academyhealth.confex.com/academyhealth/2019arm/meetingapp.cgi/Paper/33011

Maust, D.T., L.A. Lin, & F.C. Blow. 2018. “Benzodiazepine Use and Misuse Among Adults in the United States.” *Psychiatric Services 70*(2), 97–106. https://doi.org/10.1176/appi.ps.201800321

National Alliance for Model State Drug Laws. January 2, 2019. *Prescriber Mandated Use of Prescription Drug Monitoring Programs (PDMP/PMPs)—Map*. https://namsdl.org/wp-content/uploads/Prescriber-Mandated-Use-of-PDMPs-Map.pdf

National Institute on Drug Abuse. 2019. *Overdose Death Rates*. https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates

National Opioid Use Guideline Group. 2010. “Appendix B-6: Benzodiazepine Tapering.” In *Canadian Guideline for Opioid Use for Pain (v2010)*. http://nationalpaincentre.mcmaster.ca/opioid/cgop_b_app_b06.html

Nebraska Hospital Association. (n.d.). *Quality and Safety: NHA Opioid Toolkit: Treatment Guidelines for Pain: Benzodiazepine Tapering Flow Sheet*. Retrieved July 20, 2020, from https://www.nebraskahospitals.org/quality_and_safety/nha-opioid-toolkit/treatment-guidelines-for-pain/benzodiazepine-tapering-flow-sheet.html

National Institute for Health and Care Excellence (NICE). 2011. *Generalised Anxiety Disorder and Panic Disorder in Adults: Management.* https://www.nice.org.uk/guidance/cg113/resources/generalised-anxiety-disorder-and-panic-disorder-in-adults-management-pdf-35109387756997

Ng, B.J., D.G. Le Couteur, & S.N. Hilmer. 2018. “Deprescribing Benzodiazepines in Older Patients: Impact of Interventions Targeting Physicians, Pharmacists, and Patients.” *Drugs & Aging 35*(6), 493–521. https://doi.org/10.1007/s40266-018-0544-4

NM Department of Health. 2018. *New Mexico Overdose Prevention and Pain Management Advisory Council: 2018 Recommendations*. https://www.nmhealth.org/publication/view/general/5024/

Ogbonna, C.I., & A. Lembke. 2017. “Tapering Patients Off of Benzodiazepines.” *American Family Physician 96*(9), 606–610.

O'Mahony, D., D. O'Sullivan, S. Byrne, M.N. O'Connor, C. Ryan, & P. Gallagher. 2015. "STOPP/START Criteria for Potentially Inappropriate Prescribing in Older People: Version 2." *Age and Ageing 44*(2), 213–218. https://doi.org/10.1093/ageing/afu145

Paquin, A.M., K. Zimmerman, & J.L. Rudolph. 2014. "Risk Versus Risk: A Review of Benzodiazepine Reduction in Older Adults." *Expert Opinion on Drug Safety 13*(7), 919–934. https://doi.org/10.1517/14740338.2014.925444

Pottie, K., W. Thompson, S. Davies, J. Grenier, C.A. Sadowski, V. Welch, A. Holbrook, C. Boyd, R. Swenson, A. Ma, & B .Farrell. 2018. "Deprescribing Benzodiazepine Receptor Agonists." *Canadian Family Physician 64*(5), 339–351.

Qato, D.M., J. Wilder, L.P. Schumm, V. Gillet, & G.C. Alexander. 2016. "Changes in Prescription and Over-the-Counter Medication and Dietary Supplement Use Among Older Adults in the United States, 2005 vs 2011." *JAMA Internal Medicine 176*(4), 473. https://doi.org/10.1001/jamainternmed.2015.8581

Reeve, E., W. Thompson, & B. Farrell. 2017. "Deprescribing: A Narrative Review of the Evidence and Practical Recommendations for Recognizing Opportunities and Taking Action." *European Journal of Internal Medicine 38*, 3–11. https://doi.org/10.1016/j.ejim.2016.12.021

Rothbaum, B.O., M. Price, T. Jovanovic, S.D. Norrholm, M. Gerardi, B. Dunlop, et al. 2014. "A Randomized, Double-Blind Evaluation of D-Cycloserine or Alprazolam Combined With Virtual Reality Exposure Therapy for Posttraumatic Stress Disorder in Iraq and Afghanistan War Veterans." *The American Journal of Psychiatry 171*(6):640-8.

Salzman, C. 1991. "The APA Task Force Report on Benzodiazepine Dependence, Toxicity, and Abuse." *American Journal of Psychiatry 148*(2), 151–152.

Scott, I.A., S.N. Hilmer, E. Reeve, K. Potter, D.L. Couteur, D. Rigby, D. Gnjidic, C.B.D. Mar, E.E. Roughead, A. Page, J. Jansen, & J.H. Martin. 2015. "Reducing Inappropriate Polypharmacy: The Process of Deprescribing." *JAMA Internal Medicine*, *175*(5), 827–834. https://doi.org/10.1001/jamainternmed.2015.0324

Shash, D., T. Kurth, M. Bertrand, C. Dufouil, P. Barberger-Gateau, C. Berr, K. Ritchie, J.-F. Dartigues, B. Bégaud, A., Alpérovitch, & C. Tzourio. 2016. "Benzodiazepine, Psychotropic Medication, and Dementia: A Population-Based Cohort Study." *Alzheimer's & Dementia: The Journal of the Alzheimer's Association 12*(5), 604–613. https://doi.org/10.1016/j.jalz.2015.10.006

Sivertsen, B., S. Omvik, S. Pallesen, B. Bjorvatn, O.E. Havik, G. Kvale, et al. 2006. "Cognitive Behavioral Therapy vs Zopiclone for Treatment of Chronic Primary Insomnia in Older Adults: A Randomized Controlled Trial." *JAMA 295*(24):2851-8.

Substance Abuse and Mental Health Services Administration. 2011. *Center for Behavioral Health Statistics and Quality: Drug Abuse Warning Network, 2008: National Estimates of Drug-Related Emergency Department Visits*.

Takada, M., M. Fujimoto, & K. Hosomi. 2016. "Association between Benzodiazepine Use and Dementia: Data Mining of Different Medical Databases." *International Journal of Medical Sciences 13*(11), 825–834. https://doi.org/10.7150/ijms.16185

Tannenbaum, C., P. Martin, R. Tamblyn, A. Benedetti, & S. Ahmed. 2014. "Reduction of Inappropriate Benzodiazepine Prescriptions Among Older Adults Through Direct Patient Education: The EMPOWER Cluster Randomized Trial." *JAMA Internal Medicine 174*(6), 890–898. https://doi.org/10.1001/jamainternmed.2014.949

The New Mexico Overdose Prevention and Pain Management Advisory Council. 2019. *Guidelines for the Use of Benzodiazepines in the State of New Mexico*.

VA National Center for PTSD. 2013. *Effective Treatments for PTSD: Helping Patients Taper from Benzodiazepines* (p. 2). https://www.va.gov/painmanagement/docs/OSI_6_Toolkit_Taper_Benzodiazepines_Clinicians.pdf

van der Stelt, C.a.K., A.M.A. Vermeulen Windsant-van den Tweel, A.C.G. Egberts, P.M.L.A. van den Bemt, A.J. Leendertse, W.a.J.J. Hermens, R.J. van Marum, & H.J. Derijks. 2016. "The Association Between Potentially Inappropriate Prescribing and Medication-Related Hospital Admissions in Older Patients: A Nested Case Control Study." *Drug Safety 39*(1), 79–87. https://doi.org/10.1007/s40264-015-0361-1

Vinkers, C.H., & B. Olivier. 2012. "Mechanisms Underlying Tolerance after Long-Term Benzodiazepine Use: A Future for Subtype-Selective GABAA Receptor Modulators?" *Advances in Pharmacological Sciences 2012*. https://doi.org/10.1155/2012/416864

Winstanley, E.L., Y. Zhang, R. Mashni, S. Schnee, J. Penm, J. Boone, C. McNamee, & N.J. MacKinnon. 2018. "Mandatory Review of a Prescription Drug Monitoring Program and Impact on Opioid and Benzodiazepine Dispensing." *Drug and Alcohol Dependence 188*, 169–74. https://doi.org/10.1016/j.drugalcdep.2018.03.036

Woolcott, J.C., K.J. Richardson, M.O. Wiens, B. Patel, J. Marin, K.M. Khan, & C.A. Marra. 2009. "Meta-Analysis of the Impact of 9 Medication Classes on Falls in Elderly Persons." *Archives of Internal Medicine 169*(21), 1952–1960. https://doi.org/10.1001/archinternmed.2009.357

Xing, D., X.L. Ma, J.X. Ma, J. Wang, Y. Yang, & Y. Chen. 2014. “Association Between Use of Benzodiazepines and Risk of Fractures: A Meta-Analysis. *Osteoporosis International: A Journal Established as Result of Cooperation between the European Foundation for Osteoporosis and the National Osteoporosis Foundation of the USA 25*(1), 105–20. https://doi.org/10.1007/s00198-013-2446-y

Zhong, G., Y. Wang, Y. Zhang, & Y. Zhao. 2015. “Association Between Benzodiazepine Use and Dementia: A Meta-Analysis.” *PLoS ONE 10*(5). https://doi.org/10.1371/journal.pone.0127836

Zimlich, R. April 29, 2016. “Impact of Medicare’s Expanded Benzodiazepine Coverage.” *Managed Healthcare Executive.* https://www.managedhealthcareexecutive.com/managed-healthcare-executive/news/impact-medicares-expanded-benzodiazepine-coverage