

Effectiveness of a direct-to-consumer written health education program in the reduction of benzodiazepine and sedative-hypnotic use in an elderly population at a single Veterans Affairs medical center

William J. Erwin, MS, EdS, PharmD, BCPP¹

Courtney Goodman, PharmD, BCPP²

Tammy Smith, PharmD, BCPS, BCPP³

How to cite: Erwin WJ, Goodman C, Smith T. Effectiveness of a direct-to-consumer written health education program in the reduction of benzodiazepine and sedative-hypnotic use in an elderly population at a single Veterans Affairs medical center. *Ment Health Clin* [Internet]. 2018;8(3):100-4. DOI: 10.9740/mhc.2018.05.100.

Abstract

Introduction: The use of benzodiazepines and sedative-hypnotics in the elderly is associated with a significant risk of delirium, falls, fractures, cognitive impairment, and motor vehicle accidents. This quality improvement project applies a direct-to-consumer intervention to an elderly veteran population to reduce the use of these medications.

Methods: Patients aged 75 and older currently taking a benzodiazepine and/or a sedative-hypnotic were included in the project. Direct-to-consumer education intervention letters were mailed to patients within 30 days of their next appointment. Their providers were emailed a questionnaire after the patient's appointment. Providers were asked if the letter prompted a conversation regarding medication use, whether the provider initiated discussion regarding a taper, and whether a specific taper plan was developed. Medical records were reviewed to determine if a reduction in dose or discontinuation occurred.

Results: Fifty-nine direct-to-consumer education letters were mailed to the patients. Follow-up questionnaires were e-mailed to 44 providers, and 27 providers responded. Twenty-two percent of patients had their benzodiazepine and/or sedative hypnotic dose reduced or discontinued after their follow-up appointment. Sixty-seven percent of veterans initiated a conversation with their provider regarding their medication with 74% of providers discussing dose reduction. Fifty-six percent of recipients developed a specific taper plan with their provider.

Discussion: The data from this project suggests that direct-to-consumer patient education can reduce the exposure to benzodiazepines and sedative-hypnotics in an elderly veteran population. More data is needed on larger populations to further explore the benefit of direct-to-consumer interventions.

Keywords: benzodiazepines, sedative-hypnotics, direct-to-consumer, elderly, veteran

¹ (Corresponding author) Clinical Pharmacy Specialist, Fayetteville North Carolina Veterans Affairs Medical Center, Fayetteville, North Carolina, william.erwin2@va.gov, william.erwin2015@gmail.com, ORCID: <http://orcid.org/0000-0002-8550-1044>; ² Clinical Pharmacy Specialist, W.G. (Bill) Hefner Veterans Affairs Medical Center, Salisbury, North Carolina, ORCID: <http://orcid.org/0000-0002-2618-0260>; ³ Clinical Pharmacy Specialist, W.G. (Bill) Hefner Veterans Affairs Medical Center, Salisbury, North Carolina, ORCID: <http://orcid.org/0000-0002-7062-7234>

Disclosures: The authors have nothing to disclose.

Introduction

Benzodiazepines and sedative-hypnotics are classes of medications that have been used for decades to treat various psychiatric conditions. However, despite their efficacy, their use has been associated with a number of adverse events. The use of benzodiazepines and sedative-hypnotics (eg, zolpidem, zaleplon) in the elderly increases

the risk of adverse events due to the multiple medical comorbidities, pharmacokinetic changes, and polypharmacy typically present in this population.¹ The Beers Criteria for Potentially Inappropriate Medication Use in Older Adults² recommends that all short- and long-acting benzodiazepine and sedative-hypnotic drugs used for the treatment of insomnia be avoided in older adults due to an excessive risk of delirium, falls, fractures, and motor vehicle accidents. The use of benzodiazepines in the elderly is associated with an increased risk of amnesic and nonamnesic cognitive impairment and impaired short-term memory.³ Long-term benzodiazepine use may also increase the risk of dementia although this association remains controversial.^{4,5} In 2016, a prospective population-based cohort study⁶ on patients 65 years and older without dementia did not find an association between the highest level of benzodiazepine use and dementia or cognitive decline. The use of sedative-hypnotics has been associated with an increased risk of dementia and fall-related injuries, including traumatic brain injury and hip fractures in elderly patients.^{7,8} Despite the adverse events associated with and guidance against benzodiazepine and sedative-hypnotic use in the elderly, their use is not uncommon. Benzodiazepines represent one of the most prevalent inappropriately prescribed medication classes in the United States. A recent population-level retrospective observational study⁹ of benzodiazepine use in the United States revealed that 31.4% of adults aged 65–80 reported chronic use. Given the aforementioned risks associated with benzodiazepine and sedative-hypnotic use, the Department of Veterans Affairs Psychotropic Drug Safety Initiative has issued guidance to minimize the exposure of elderly patients to the side effects and adverse events associated with use of benzodiazepines and sedative-hypnotics. Academic detailing programs have been implemented to inform providers of the risks associated with benzodiazepine and sedative-hypnotic use in elderly veterans.¹⁰

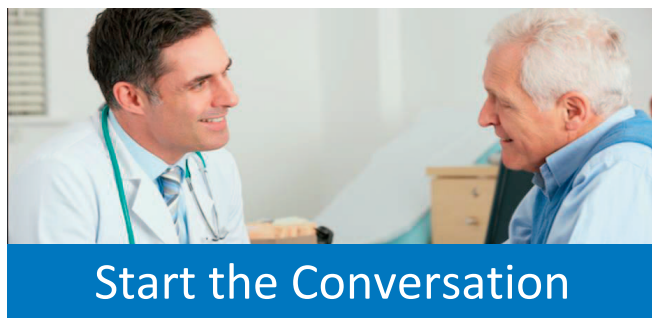
Many efforts have been made to reduce the use of benzodiazepines in the elderly. A meta-analysis of trials detailing interventions for reducing benzodiazepine use in the elderly revealed that both a medication review with consultation as well as a supervised withdrawal schedule augmented with psychotherapy were effective.¹¹ Although effective, these strategies can prove resource-intensive and impractical to implement in all practice settings. In 2014, a randomized controlled trial conducted on older adults (ages 54–72, median age 65) compared the efficacy of structured interventions with follow-up visits versus structured interventions with written instructions. The trial revealed that both interventions led to significant reductions in long-term benzodiazepine use without significant adverse effects.¹² In an effort to increase patient participation in the reduction of their benzodiazepine use, a direct-to-patient education program was

developed and studied by Tannenbaum et al.¹³ The EMPOWER trial employed the use of an 8-page booklet based on social constructivist learning and self-efficacy therapy. Unique design elements incorporated into the intervention included self-assessment regarding risks, presentation of evidence, knowledge statements designed to create cognitive dissonance, education regarding drug interactions, peer champion stories, suggestions for substitutes, and stepwise tapering recommendations. This direct-to-consumer education led to either discontinuation or dose reduction in more than a third of patients who received the empowerment intervention.¹³ Despite the success of this intervention, it was conducted on Canadian citizens and may not be generalizable to an elderly veteran population.

The purpose of this pilot project was to determine the effectiveness of a direct-to-consumer educational intervention in reducing benzodiazepine and/or sedative-hypnotic use in an elderly veteran sample. Compared to the EMPOWER trial intervention, this project utilized a more concise, 2-page, tailored intervention written on a 6th grade reading level. It was designed to highlight the negative consequences of benzodiazepine and sedative-hypnotic use while encouraging communication with providers regarding alternatives. The project explored the effect this intervention had on the facilitation of a therapeutic conversation between provider and patient regarding the need to reduce exposure to benzodiazepines and/or sedative-hypnotics and the development of a specific taper plan to achieve this goal. The intervention was designed to facilitate the adaptation and ultimate utilization of this intervention by other providers. This project was approved by the local pharmacy and therapeutics committee and determined to be a quality improvement project.

Methods

Based on the intervention utilized in the EMPOWER trial, a 2-page letter detailing the risks of benzodiazepine and sedative-hypnotic use was developed and approved by the local patient education committee. Specific to veterans, the letter described the Department of Veterans Affairs Psychotropic Drug Safety Initiative and the risks associated with the patient's specific benzodiazepine and/or sedative-hypnotic. The veteran was encouraged to speak to his provider about alternatives. To ensure patient safety, the letter encouraged veterans not to abruptly stop taking their medication without discussion with their provider. The letter was sent to veterans aged 75 or older (Figure 1) with an appointment scheduled with their mental health provider within the next month. After the scheduled appointment, the providers of these patients were contacted via encrypted e-mail (Figure 2) within 1



You are currently taking one of these medicines

<input type="checkbox"/> Alprazolam	<input type="checkbox"/> Estazolam	<input type="checkbox"/> Temazepam
<input type="checkbox"/> Chlordiazepoxide	<input type="checkbox"/> Flurazepam	<input type="checkbox"/> Triazolam
<input type="checkbox"/> Clonazepam	<input type="checkbox"/> Lorazepam	<input type="checkbox"/> Eszopiclone
<input type="checkbox"/> Diazepam	<input type="checkbox"/> Oxazepam	<input type="checkbox"/> Zaleplon
		<input type="checkbox"/> Zolpidem

Please bring this information to your next appointment scheduled on _____



Approved by the VHE Subcouncil
October 2016

Drug Safety Program

The VA has started a drug safety program for you.

These medicines have been around for many years. They are used to treat anxiety and sleep problems. If taken the wrong way or mixed with alcohol or street drugs, they can cause serious side effects. These drugs remain in your body longer as you age. This means that they can stay in your body several days and can cause the side effects listed below.

The Potential Side Effects of Your Medicine

- Slowed breathing
- Memory and thinking problems
- Morning "hangover" or feeling groggy
- Problems sleeping without medicine
- Falls and accidents
- Physical dependence and/or addiction

There are other options that may improve your sleep and reduce your anxiety.

Please talk to your provider about your options.

Do not stop taking medicines before talking to your provider. If you have any questions, please talk to your provider at your next appointment.

FIGURE 1: Direct-to-consumer patient education intervention (VA = Veterans Affairs)

week after the appointment and asked to complete a follow-up survey. Providers were asked whether the educational material prompted the patient to initiate a conversation regarding his medication. They were also asked if they discussed tapering the patient's benzodiaz-

epine and/or sedative-hypnotic therapy and whether a specific taper plan was developed. After the appointment, the computerized patient record system was accessed to verify dose reduction via medication order.

Dr. _____

Your patient _____, recently seen by you on __/__/__, was provided a letter to educate them on the use of their benzodiazepine and/or sedative-hypnotic. In this letter, they were encouraged to discuss with you their benzodiazepine and/or sedative-hypnotic use. To determine the effectiveness of this education it is important that you answer the following three questions regarding this appointment.

- 1) Did the patient discuss with you their use of benzodiazepine and/or sedative hypnotic?
- 2) Did you discuss reducing their dose?
- 3) Did you discuss a plan to taper and/or discontinue their benzodiazepine and/or sedative hypnotic?

Please reply to this email with a yes or no answer to each question. For convenience, you may copy the body of this email in your response and type "yes" or "no" next to each question. Thank you for your time and if you have any questions regarding this educational material please do not hesitate to contact me.

William J. Erwin, PharmD
PGY2 Psychiatric Pharmacy Resident
W.G. (Bill) Hefner VA Medical Center

FIGURE 2: Follow-up e-mail survey sample

Veterans were included in the study if they were aged 75 or older and filled a 30-day supply of a benzodiazepine and/or a sedative-hypnotic by a mental health provider as identified by the Psychotropic Drug Safety Initiative database. Scheduled appointments between the dates of November 1, 2016, and April 30, 2017, were analyzed. Patients were excluded if their medication was being used to treat a seizure disorder.

Results

Fifty-nine patients met inclusion criteria and received letters, and none were excluded based on indication. Fifteen patients either cancelled or did not show for their scheduled appointments. Forty-four follow-up e-mails were sent to providers per protocol, and 27 responses were received.

All patients were male with ages ranging from 75 to 90 years with an average age of 81 years. Medication utilization by this cohort included 12 patients prescribed alprazolam, 16 prescribed clonazepam, 3 prescribed diazepam, 13 prescribed lorazepam, 1 prescribed oxazepam, 2 prescribed temazepam, and 12 prescribed zolpidem.

Of the 27 e-mail responses received, the intervention resulted in a dose reduction in 6 patients (22%). Two of the patients who experienced a dose reduction were prescribed clonazepam, 2 prescribed zolpidem, 1 prescribed lorazepam, and 1 prescribed alprazolam. Based on the responses received from providers, 67% of patients initiated a conversation about their medication. Providers reported that they discussed reducing the dose in 74% of the patient cases. A specific plan to taper the dose was developed in 56% of the cases.

Discussion

Upon receipt of the intervention, 22% of patients experienced a dose reduction in either their benzodiazepine or sedative-hypnotic. This reduction was observed after 1 visit with their provider after having received the intervention. Data suggests that the intervention enhanced communication between provider and patient. Two thirds of patients who received the intervention discussed their use of benzodiazepines and/or sedative-hypnotics with their provider, resulting in a specific plan to taper being developed in over half. Compared to the EMPOWER trial intervention, this intervention was abbreviated in length and focused on adverse event education and the fostering of communication between provider and patient. Furthermore the end points were measured at 1 month as opposed to 6. The results observed in this project are similar to the 38% reduction in

dose that was observed in the EMPOWER trial.¹³ Given the adverse events associated with the use of benzodiazepines and sedative-hypnotics in the elderly, a dose reduction in one-fifth of patients is meaningful for clinical practice.

Limitations of this project include the reliance on provider responses to a follow-up survey. Approximately 40% of providers did not respond, and the impact of the intervention could not be determined in those patients. Also, providers may have answered in ways to cast the best light on their practices, given that the responses to surveys were not anonymous. Before the initiation of the project, providers were made aware that the study would begin, possibly influencing their behavior with their elderly patients. Another limitation to this study involves the lack of longitudinal data on the effectiveness of this intervention. As observed in the EMPOWER trial, dose reductions have occurred as far out as 6 months postintervention.¹³

Future projects should incorporate an expansion of this intervention to include a larger sample size with a more diverse group of prescribers. Studies to identify the specific aspect of the intervention that generates the greatest response could allow for the design of a more efficient intervention. Additional studies comparing the effectiveness of adjunctive direct-to-consumer educational interventions would assist in the development of a comprehensive strategy to reduce patient exposure to benzodiazepines and sedative-hypnotics.

Direct-to-consumer interventions have a role to play in efforts to reduce exposure to benzodiazepines and sedative-hypnotics in elderly populations. Future research into their utility will further clarify this role.

Acknowledgments

The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the US Government.

References

1. Madhusoodanan S, Bogunovic OJ. Safety of benzodiazepines in the geriatric population. *Expert Opin Drug Saf.* 2004;3(5):485-93. PubMed PMID: [15335303](#).
2. American Geriatrics Society 2015 Beers Criteria Update Expert Panel. American Geriatrics Society 2015 Updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc.* 2015;63(11):2227-46. DOI: [10.1111/jgs.13702](#). PubMed PMID: [26446832](#).
3. Tannenbaum C, Paquette A, Hilmer S, Holroyd-Leduc J, Carnahan R. A systematic review of amnestic and non-amnestic mild cognitive impairment induced by anticholinergic, antihistamine, GABAergic and opioid drugs. *Drugs Aging.* 2012;29(8):639-58. DOI: [10.2165/11633250-000000000-00000](#). PubMed PMID: [22812538](#).

4. Billioti de Gage S, Bégaud B, Bazin F, Verdoux H, Dartigues J-F, Pérès K, et al. Benzodiazepine use and risk of dementia: prospective population based study. *BMJ*. 2012;345:e6231. DOI: [10.1136/bmj.e6231](https://doi.org/10.1136/bmj.e6231). PubMed PMID: [23045258](https://pubmed.ncbi.nlm.nih.gov/23045258/); PubMed Central PMCID: [PMC3460255](https://pubmed.ncbi.nlm.nih.gov/PMC3460255/).
5. Pariente A, de Gage SB, Moore N, Bégaud B. The benzodiazepine-dementia disorders link: current state of knowledge. *CNS Drugs*. 2016;30(1):1-7. DOI: [10.1007/s40263-015-0305-4](https://doi.org/10.1007/s40263-015-0305-4). PubMed PMID: [26715389](https://pubmed.ncbi.nlm.nih.gov/26715389/).
6. Gray SL, Dublin S, Yu O, Walker R, Anderson M, Hubbard RA, et al. Benzodiazepine use and risk of incident dementia or cognitive decline: prospective population based study. *BMJ*. 2016;352:ig0. DOI: [10.1136/bmj.ig0](https://doi.org/10.1136/bmj.ig0). PubMed PMID: [26837813](https://pubmed.ncbi.nlm.nih.gov/26837813/).
7. Shih H-I, Lin C-C, Tu Y-F, Chang C-M, Hsu H-C, Chi C-H, et al. An increased risk of reversible dementia may occur after zolpidem derivative use in the elderly population: a population-based case-control study. *Medicine (Baltimore)*. 2015;94(17):e809. DOI: [10.1097/MD.0000000000000809](https://doi.org/10.1097/MD.0000000000000809). PubMed PMID: [25929937](https://pubmed.ncbi.nlm.nih.gov/25929937/).
8. Tom SE, Wickwire EM, Park Y, Albrecht JS. Nonbenzodiazepine sedative hypnotics and risk of fall-related injury. *Sleep*. 2016;39(5):1009-14. DOI: [10.5665/sleep.5742](https://doi.org/10.5665/sleep.5742). PubMed PMID: [26943470](https://pubmed.ncbi.nlm.nih.gov/26943470/).
9. Olfson M, King M, Schoenbaum M. Benzodiazepine use in the United States. *JAMA Psychiatry*. 2015;72(2):136-42. DOI: [10.1001/jamapsychiatry.2014.1763](https://doi.org/10.1001/jamapsychiatry.2014.1763). PubMed PMID: [25517224](https://pubmed.ncbi.nlm.nih.gov/25517224/).
10. Wiechers IR. Improving psychopharmacological care for older veterans: implementation of phase 2 of the psychotropic drug safety initiative. *Am J Geriatr Psychiatry*. 2016;24(3):S155-6. DOI: [10.1016/j.jagp.2016.02.026](https://doi.org/10.1016/j.jagp.2016.02.026).
11. Gould RL, Coulson MC, Patel N, Highton-Williamson E, Howard RJ. Interventions for reducing benzodiazepine use in older people: meta-analysis of randomised controlled trials. *Br J Psychiatry*. 2014;204(2):98-107. DOI: [10.1192/bjp.bp.113.126003](https://doi.org/10.1192/bjp.bp.113.126003). PubMed PMID: [24493654](https://pubmed.ncbi.nlm.nih.gov/24493654/).
12. Vicens C, Bejarano F, Sempere E, Mateu C, Fiol F, Socias I, et al. Comparative efficacy of two interventions to discontinue long-term benzodiazepine use: cluster randomised controlled trial in primary care. *Br J Psychiatry*. 2014;204(6):471-9. DOI: [10.1192/bjp.bp.113.134650](https://doi.org/10.1192/bjp.bp.113.134650). PubMed PMID: [24526745](https://pubmed.ncbi.nlm.nih.gov/24526745/).
13. Tannenbaum C, Martin P, Tamblyn R, Benedetti A, Ahmed S. Reduction of inappropriate benzodiazepine prescriptions among older adults through direct patient education: the EMPOWER cluster randomized trial. *JAMA Intern Med*. 2014;174(6):890-8. DOI: [10.1001/jamainternmed.2014.949](https://doi.org/10.1001/jamainternmed.2014.949). PubMed PMID: [24733354](https://pubmed.ncbi.nlm.nih.gov/24733354/).