Prevalence of and Factors Related to
PRESCRIPTION OPIOIDS, BENZODIAZEPINES, AND HYPNOTICS
Among Medicare Home Health Recipients

Brandi P. Cotton, PhD, MSN, APRN,

Matthew C. Lohman, PhD,

Jessica M. Brooks, PhD,

Karen L. Whiteman, PhD,

Yuhua Bao, PhD,

Rebecca L. Greenberg, MS, and

Martha L. Bruce, PhD, MPH

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High rates of controlled prescription drugs are associated with cognitive impairment, falls, and misuse and dependence. Little is known about the prevalence of these medications among older adults receiving home healthcare. The purpose of this study was to determine the frequency of, and the factors related to, opioid analgesics, benzodiazepines (BNZ), and nonbenzodiazepine (NBNZH) hypnotics among a large sample of older adults entering home healthcare services. The data came from administrative records of 133 Certified Home healthcare Agencies located across 32 states. Patients (age ≥ 65) receiving Medicare home healthcare services and who received a start-of-care Medicare OASIS assessment between January 1, 2013, and December 31, 2014, were included in the study (n = 87,780). Rates of controlled medication use were compared across patient-level sociodemographic, clinical, functional, and environmental variables. The prevalence of controlled medication was high, with 58% prescribed at least one class of controlled drug, 44% were prescribed an opioid, 19% were prescribed a BNZ, and almost 7% were prescribed a NBZDH. Factors independently associated with higher levels of controlled medication usage include younger-old age, white race, postsurgical status, injuries, referral from inpatient settings, and rural location. Home healthcare clinicians are well positioned to review and reconcile medication, oversee referrals and follow-up care, and provide ongoing assessment of risk regarding the use of opioids, BNZ, and hypnotics among home healthcare patients.

Controlled prescription drugs, such as opioid analgesics, benzodiazepines (BNZ), and non-benzodiazepine hypnotics (NBNZH), are frequently prescribed to older adults. Prescriptions for opioid analgesics more than doubled from 1999 to 2010 among the general population of U.S. adults age 65 years or older (Steinman et al., 2015). BNZ are prescribed at a rate of 8.7% among those age 65 to 80 years (Olfson et al., 2015) and prescription drugs for the treatment of insomnia are prescribed with an estimated prevalence of 4% to 5% among adults 60 years of age and older (Bertisch et al., 2014).

Although controlled drugs are often prescribed for legitimate medical reasons, their use poses potential adverse consequences, especially among older adults, such as increased risk of cognitive decline, falls (Huang et al., 2012), and misuse or dependence (Simoni-Wastila & Yang, 2006). Age-related changes in pharmacokinetics and pharmacodynamics make older adults especially vulnerable to adverse events and harmful drug interactions (Huang et al.).

Controlled prescription medication may be especially relevant to Medicare home healthcare as the majority of patients are referred for these services following hospitalization when controlled substances may be newly prescribed. These patients may be particularly vulnerable given their high level of medical burden, functional impairment, and polypharmacy. At the same time, medication reconciliation and management is a routine component of home care, offering an opportunity to mitigate potential risks associated with use of controlled prescription drugs.

This article uses administrative data from a large sample of older home healthcare patients to describe the use of controlled prescription drugs, including opioid analgesics, BNZ, and NBNZH in these patients and to identify sociodemographic, clinical, functional, and environmental factors associated with their use. The purpose of this article is to estimate the overall burden in this patient population, describe vulnerable subpopulations where prevalence is highest, and identify potential opportunities for nursing intervention.

Methods
Sample
The sample included Medicare home care patients under the care of 132 home care agencies that subscribed to Brightree, LLC, a software company offering web-based support for clinical tracking, referral, care planning, reporting, and billing. Electronic health records were obtained in the context of an agency-randomized implementation trial that offered agencies access to web-based resources to support their clinicians' use of a depression care management protocol. The protocol was integrated into the standard clinical software and available to all clinicians for use with patients who screened positive for depression on the Medicare Outcome and Assessment Information Set (OASIS).

The 132 home care agencies were located across 32 states. Agencies served an average of 333 patients per year, similar to national statistics (Centers for Disease Control and Prevention, 2004). Patient sociodemographic characteristics (e.g., 63.3% female, 33.2% age ≥ 86, 87.5% white,

Age-related changes in pharmacokinetics and pharmacodynamics make older adults especially vulnerable to adverse events and harmful drug interactions.

11.1% black) were likewise similar to national data (Centers for Disease Control and Prevention, 2004).

This sample included all Medicare patients (age ≥ 65) who received a Medicare-mandated start-of-care episode using the OASIS between January 1, 2013, and December 31, 2014. For the subset of patients who started home care more than once over the 2-year period (*n* = 13,357), only the first episode was included in analysis. Our final sample included 87,780 unique patient episodes. Data collection and analysis were approved by the Weill Cornell Medical College and Dartmouth College Institutional Review Boards.

Measures
Controlled Prescription Medication
Controlled medications were determined using American Hospital Formulary Service (AHFS) codes and medication names, recorded by nurses during start-of-care OASIS assessment for each patient. We considered controlled prescriptions to include opioids (AHFS codes: 28.08.08; 28.08.12), benzodiazepines (AHFS codes: 28.12.08; 28.24.08), nonbenzodiazepine hypnotics (AHFS code: 28.24.92), stimulants (AHFS code: 28.28.20), or use of these medications in combination drugs containing controlled ingredients.

Independent Predictors
Sociodemographic, clinical, functional, and environmental variables as potential independent predictors of controlled prescription drugs were derived from the OASIS conducted at patients' start of care. *Sociodemographic* information included age (65–74, 75–84, and 85+), race (white, black, Asian, and other race), ethnic group (Hispanic vs. non-Hispanic), dual Medicaid/Medicare eligibility, and home care referral source.

Clinical factors were measured using ICD-9 codes and included 1) six most common primary home care diagnoses—congestive heart failure, chronic obstructive pulmonary disease (COPD), stroke, skin wound or ulcer, and type 2 diabetes, 2) two common nondisease home care indications relevant to controlled substance use—rehabilitation after bone fracture and surgical aftercare, and 3) obesity as recorded in the OASIS.

Functional factors included limitation in nine activities of daily living (ADL)—grooming, dressing upper body, dressing lower body, bathing, toilet transferring, toilet hygiene, transferring, ambulation, and feeding—and were summed so that higher scores represent greater limitation. ADL limitation summary score was then standardized for analysis (Mean = 0, SD = 1). Patients with pain that interfered with movement or activity daily or all of the time were considered to have severe pain. Poor cognitive functioning was operationalized as requirement of considerable assistance or total dependence on others due to cognitive disturbance. Finally, depressive symptoms were measured using the two-item Patient Health Questionnaire (PHQ-2) depression screen (Kroenke et al., 2003). A PHQ-2 score of 3 or greater indicated clinically meaningful depressive symptoms (Kroenke et al.).

Environmental factors considered in analysis included: 1) referral source (hospital, skilled nursing or rehabilitation facility, community, or other), 2) agency type (freestanding or hospital-based), 3) agency location (rural vs. metropolitan), and 4) geographic region (Northeast, South, West, or Midwest).

Analytic Strategy
We generated descriptive statistics indicating the prevalence of controlled prescription drugs by each potential predictor variable. For the composite indicator of controlled medication use and for specific types of medications, bivariate logistic regression models were fit with any controlled medication as the binary dependent variable and each potential predictor as the independent variable. Given the large size of the sample, predictors

Table 1. Rates of Controlled Medication Use by Sociodemographic and Agency Factors

	N	% Any Med	% Opiate	% BNZ	% Hypnotic
Total	87,780	58.1%	44.0%	18.9%	6.8%
Age (years)					
65 to 74	26,364	71.2%	59.7%	22.3%	9.2%
75 to 84	32,259	58.7%	43.9%	19.1%	6.8%
85+	29,157	45.5%	29.9%	15.5%	4.7%
Gender					
Female	55,599	60.7%	45.3%	21.1%	7.3%
Male	32,181	53.6%	41.7%	15.1%	6.0%
Race					
White	76,847	59.1%	44.3%	19.9%	7.1%
Black	9,697	51.3%	41.7%	11.6%	4.8%
Asian	672	46.6%	37.8%	8.2%	5.4%
Other	563	54.9%	44.6%	14.0%	5.0%
Hispanic					
Yes	1,696	55.4%	41.5%	15.2%	6.5%
No	86,084	58.1%	44.1%	18.9%	6.8%
Lives alone					
Yes	22,997	57.4%	43.3%	19.3%	7.1%
No	64,783	58.3%	44.3%	18.7%	6.7%
Dual Medicare/Medicaid					
Eligible	2,978	60.3%	45.1%	22.4%	9.2%
Not eligible	37,275	58.0%	44.0%	18.8%	6.7%
Referral source					
Hospital	35,638	63.6%	51.8%	18.8%	7.0%
Community	27,619	50.1%	32.9%	18.9%	6.1%
SNF/Rehabilitation	23,881	59.1%	45.4%	18.8%	7.3%
Other	640	56.6%	34.7%	22.8%	6.4%
Region					
Northeast	23,704	49.7%	34%	17.2%	5.2%
South	35,394	62.8%	48.8%	21.4%	8.0%
Midwest	25,760	58.9%	45.7%	17.2%	6.4%
West	2,922	62.0%	52.3%	16.5%	9.0%
Rural location					
Yes	17,061	64.1%	50.7%	21.1%	7.6%
No	70,719	87.6%	42.4%	18.3%	6.6%
Hospital-based agency					
Yes	17,520	60.0%	45.9%	20.1%	7.5%
No	70,260	57.6%	43.5%	18.6%	6.6%
Agency ownership					
Public	9,043	65.6%	51.7%	23.1%	7.9%
Religious nonprofit	1,679	63.1%	50.9%	16.3%	7.7%
Private nonprofit	16,968	56.1%	41.9%	18.8%	6.2%
Private for-profit	59,946	57.4%	43.3%	18.3%	6.8%

Note. Any med = any prescription for an opioid, benzodiazepine, or hypnotic; BNZ = benzodiazepine; SNF = skilled nursing facility.

were retained for multivariate analysis on the basis of statistical significance ($p \leq .05$) and size (i.e., predictors associated with at least 10% greater or lesser odds of controlled medication usage). Multivariable logistic regression models were then fit with all retained predictor variables and demographic covariates. Multivariable logistic regression models were then fit separately for each class of controlled medication. All analyses were performed using Stata statistical software version 14.1 (StataCorp, College Station, TX).

Results

The prevalence of controlled medication within the sample was high with 58% prescribed at least one class of controlled drug; 44% of patients were prescribed an opioid, 19% were prescribed a BNZ, and almost 7% were prescribed a NBNZH (Table 1).

Use of controlled medications varied by sociodemographic factors. Use of opioids, BNZ, and NBNZH decreased with advancing age with adults aged 65 to 74 years having the highest prevalence, followed by adults 75 to 84 years of age. Females were more likely than males to use all three classes of medication. White patients were more likely to receive opioid prescriptions than minority groups.

The prevalence of controlled medications also varied by clinical factors (Table 2). Use of all three classes of medication was highest among patients reporting severe pain. The three diagnoses with the highest rate of prescription opiates were surgical aftercare, rehabilitation, and osteoarthritis; BNZ and NBNZH use was most common among those diagnosed with COPD.

In adjusted models (Table 3), several primary medical diagnoses and conditions (indicating reasons for referral to home care) remained significantly associated with use of any controlled drug and specifically with use of opioid analgesics, including postsurgical operation (any: OR 2.54, CI 2.41–2.69; Opioid OR 3.41, CI 3.24–3.59), rehabilitation (any: OR 1.45, CI 1.33–1.59; Opioid OR 2.07, CI 1.90–2.26), and osteoarthritis (any: 1.24, CI 1.11–1.38; Opioid OR 1.35, CI 1.22–1.51) (Table 3). These conditions were not associated with use of BNZ or hypnotics. Primary diagnoses of heart failure, stroke, and diabetes mellitus type 2 were each associated with a lower probability of using any class of controlled medications.

Depression (PHQ-2 ≥ 3) was associated with a greater likelihood of using any controlled medication (OR 1.33 CI 1.23–1.43), and specifically with using a NBNZH (OR1.71 CI 1.53–1.90), or BNZ (OR 1.95 CI 1.81–2.11). Patients experiencing limitations in ADL or severe pain were more likely to receive prescriptions for all three classes of medication. Obesity was associated with an increased use of opiates and a decreased use of BNZ.

Adjusting for clinical factors, patients referred from either a hospital or skilled nursing

Table 2. Rates of Controlled Medication Use by Clinical Factors

	N	% Any Med	% Opioid	% BNZ	% Hypnotic
Total	87,780	58.1%	44.0%	18.9%	6.8%
Primary diagnosis					
Heart failure	6,789	46.0%	29.6%	18.7%	6.7%
COPD	2,943	57.6%	35.7%	31.6%	9.2%
Stroke	3,173	42.3%	24.6%	16.7%	6.0%
Osteoarthritis	1,635	62.7%	49.7%	17.8%	6.2%
Skin wound/ulcer	3,147	53.3%	39.0%	17.5%	5.8%
Type II diabetes	2,025	45.4%	30.8%	16.4%	7.6%
Rehabilitation: bone fracture	2,652	67.2%	59.2%	18.3%	6.2%
Surgical aftercare	10,786	81.2%	75.8%	14.5%	7.3%
ADL limitations					
None	21,081	54.5%	40.6%	17.7%	7.0%
Any	66,699	59.2%	45.1%	19.2%	6.7%
PHQ 2 ≥ 3					
No	84,260	57.8%	44.0%	18.3%	6.6%
Yes	3,520	64.8%	44.0%	33.2%	11.6%
Poor cognitive functioning					
No	72,290	60.2%	47.1%	18.5%	7.0%
Yes	15,490	48.4%	29.3%	20.7%	5.9%
Severe pain					
No	36,061	40.7%	22.4%	16.5%	5.4%
Yes	51,719	70.2%	59.1%	20.5%	7.8%
Obesity					
No	85,755	58.4%	44.3%	18.9%	6.8%
Yes	2,025	45.5%	30.8%	16.4%	7.6%

Note. ADL = activities of daily living; COPD = chronic obstructive pulmonary disease; PHQ = Patient Health Questionnaire.

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Table 3. Adjusted Association of Controlled Medication With Sociodemographic Clinical and Organizational Factors

	Any Med		Opiate		Benzodiazepine		Hypnotic	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age, years (Reference: 65-74 years)								
75–84	0.65	(0.62, 0.67)	0.63	(0.61, 0.66)	0.77	(0.74, 0.80)	0.74	(0.70, 0.79)
85+	0.42	(0.41, 0.44)	0.41	(0.40, 0.43)	0.56	(0.53, 0.58)	0.52	(0.48, 0.56)
Female	1.47	(1.43, 1.52)	1.26	(1.22, 1.30)	1.57	(1.51, 1.63)	1.29	(1.22, 1.37)
Race (Reference: white)								
Black	0.61	(0.58, 0.64)	0.81	(0.77, 0.85)	0.44	(0.41, 0.47)	0.54	(0.49, 0.60)
Asian	0.52	(0.44, 0.62)	0.66	(0.55, 0.79)	0.35	(0.26, 0.47)	0.67	(0.47, 0.96)
Other	0.66	(0.55, 0.80)	0.76	(0.62, 0.92)	0.59	(0.46, 0.75)	0.54	(0.37, 0.81)
Hispanic	0.82	(0.74, 0.92)	0.86	(0.77, 0.96)	0.68	(0.59, 0.78)	0.82	(0.67, 1.00)
Dual eligible	1.13	(1.04, 1.23)	1.06	(0.97, 1.15)	1.22	(1.11, 1.34)	1.43	(1.25, 1.64)
Referral source (Reference: community)								
Hospital	1.39	(1.34, 1.44)	1.65	(1.59, 1.72)	1.02	(0.98, 1.07)	1.07	(1.00, 1.14)
SNF/Rehab	1.38	(1.33, 1.44)	1.62	(1.56, 1.69)	1.09	(1.04, 1.14)	1.27	(1.18, 1.37)
Primary diagnoses								
Heart failure	0.72	(0.68, 0.76)	0.64	(0.60, 0.68)	1.04	(0.97, 1.11)	1.09	(0.98, 1.21)
Stroke	0.57	(0.52, 0.61)	0.45	(0.41, 0.49)	0.84	(0.76, 0.93)	0.89	(0.76, 1.04)
Osteoarthritis	1.24	(1.11, 1.38)	1.35	(1.22, 1.51)	0.88	(0.77, 1.00)	0.93	(0.76, 1.15)
Type II diabetes	0.64	(0.58, 0.70)	0.61	(0.55, 0.67)	0.84	(0.74, 0.95)	1.13	(0.95, 1.35)
Rehabilitation: fracture	1.45	(1.33, 1.59)	2.07	(1.90, 2.26)	0.82	(0.74, 0.91)	0.86	(0.73, 1.01)
Surgery aftercare	2.54	(2.41, 2.69)	3.41	(3.24, 3.59)	0.61	(0.57, 0.65)	0.91	(0.83, 0.99)
ADL limitations	1.15	(1.13, 1.17)	1.14	(1.12, 1.16)	1.08	(1.06, 1.10)	1.03	(1.00, 1.06)
PHQ-2 > 3	1.33	(1.23, 1.43)	1.01	(0.93, 1.08)	1.95	(1.81, 2.11)	1.71	(1.53, 1.90)
Poor cognitive function	0.73	(0.70, 0.76)	0.59	(0.56, 0.61)	1.11	(1.05, 1.16)	0.91	(0.84, 0.99)
Severe pain	2.44	(2.35, 2.53)	3.04	(2.93, 3.14)	1.28	(1.23, 1.33)	1.33	(1.25, 1.40)
Obesity	1.12	(1.08, 1.17)	1.16	(1.11, 1.20)	0.89	(0.85, 0.94)	1.04	(0.97, 1.12)
Region (Reference: Northeast)								
Midwest	1.40	(1.35, 1.46)	1.65	(1.58, 1.72)	0.98	(0.93, 1.03)	1.23	(1.13, 1.33)
South	1.65	(1.58, 1.72)	1.76	(1.68, 1.84)	1.32	(1.25, 1.39)	1.57	(1.45, 1.70)
West	1.63	(1.49, 1.78)	2.2	(2.01, 2.41)	0.95	(0.85, 1.06)	1.76	(1.52, 2.04)
Agency ownership (Reference: private for-profit)								
Religious nonprofit	1.18	(1.05, 1.31)	1.24	(1.11, 1.38)	0.86	(0.75, 0.98)	1.16	(0.97, 1.40)
Private nonprofit	1.04	(0.99, 1.08)	1.06	(1.01, 1.10)	1.09	(1.04, 1.14)	1.03	(0.96, 1.12)
Public	1.21	(1.14, 1.28)	1.19	(1.13, 1.27)	1.21	(1.13, 1.29)	1.01	(0.92, 1.12)
Rural	1.12	(1.07, 1.17)	1.14	(1.09, 1.19)	1.02	(0.97, 1.07)	1.03	(0.95, 1.11)

Note. ADL = activities of daily living; Any med = any prescription for an opioid, benzodiazepine, or hypnotic; BNZ = benzodiazepine; PHQ = Patient Health Questionnaire; SNF = skilled nursing facility.

facility (SNF) were more likely to receive controlled medication compared with community clinic referrals. Patients referred from hospitals and SNF/rehabilitation centers were more likely to use opioids and patients from SNF/rehabilitation centers were also more likely to use both a BNZ and a NBNZH when compared with patients from community clinics. Patients receiving care from public home care agencies were more likely than other patients to receive a prescription for a controlled medication (OR 1.21, CI 1.14–1.28). The same trend was observed for BNZ prescriptions (OR 1.21, CI 1.13–1.29). Patients receiving care from a religion-affiliated

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agency (OR 1.24, CI 1.11–1.38), public agency (OR 1.19, CI 1.13–1.27), and a private agency (OR 1.06, CI 1.01–1.10) were more likely to receive a prescription opioid when compared with a proprietary agency. Patients receiving care from home care agencies located in rural areas were also more likely to receive any class of controlled medications and specifically opioids.

Adjusting for other factors, patients residing in the Southern United States were most likely to receive at least one of class of controlled medication (OR 1.65, CI 1.58–1.72) compared with those in the Northeast. Rates were also higher for patients living in the Western (OR 1.63, CI 1.49–1.78) and Midwestern regions (1.40, CI 1.35–1.46). The highest rate of opioid use was observed in the Western United States (OR 2.20, CI 2.01–2.41), Southern regions (OR 1.76, CI 1.68–1.84), and Midwest (OR 1.65, CI 1.58–1.72) when compared with the Northeast. The same pattern was observed for NBNZH: West (OR 1.76, CI 1.52–2.04), South (OR 1.57, CI 1.45–1.70), and Midwest (OR 1.23, CI 1.13–1.33), when compared with the Northeast. BNZ prevalence was highest in the South (OR 1.32, CI 1.25–1.39).

Discussion

This study's major finding is that well over half (58%) of patients (age ≥ 65) start Medicare home care services having been prescribed at least one controlled medication, most commonly opioids (44.0%) and to a lesser degree benzodiazepines (18.9%) and hypnotics (6.8%). Although the likelihood of starting home care while using controlled medications varied by clinical status, sociodemographic factors, and region, the prevalence of controlled medication use was greater than 50% in almost all categories.

The high prevalence of opioids among home care patients with injuries, postsurgical, or pain may be consistent with clinical need, yet also raises important questions. Given the recent increase in Opioid Use Disorder within the United States, the high prevalence among this population raises concerns of the risk of misuse. Patients with a history of substance use disorder are more likely to demonstrate misuse of opioids (U.S. Department of Veterans Affairs, 2014), suggesting that careful screening for current and past drug and/or alcohol abuse is critical to understanding patients' risk. Home healthcare clinicians are well positioned to review and identify potentially inappropriate medication (PIM) and provide relevant psychoeducation regarding the dangers of misuse and dependence. They frequently provide care over time and have unique opportunities to improve care management. For example, recent efforts to improve outcomes related to depression have produced positive patient outcomes and illustrate the effectiveness of training home care nurses to assist in managing specific conditions among the home care population (Bruce et al., 2016, 2011). From this vantage point, home healthcare clinicians can assist in assessment, education, and monitoring in order to help reduce the risk of adverse outcomes associated with opioid prescription usage. Additionally, home healthcare clinicians may identify improvement in pain symptoms at which point opioid analgesics may no longer be needed.

BNZs were prescribed to 19% of the sample of home care patients, more than double the usage among older adults in the general population (Olfson et al., 2015). BNZs are one of the most common class of prescription drugs in the world (Donoghue & Lader, 2010; Lucchetti & Lucchetti, 2017) and older adults are frequently prescribed these medications to treat general or acute anxiety (Alvarenga et al., 2014). Insomnia, a common

complaint among older adults is often treated with NBNZH; among our sample, NBNZH were prescribed to almost 7% of those 65 years or older, compared with general samples estimated at 4% to 5% (Bertisch et al., 2014). Both BNZs and NBNZH are listed as PIM on the American Geriatric Society BEERS Criteria (American Geriatrics Society 2015 Beers Criteria Update Expert Panel, 2015). Although the BEERS Criteria suggest that BNZ may be appropriate for managing certain conditions, it strongly cautions prescribers to weigh the benefits of this class of medication against the increased risk of falls, delirium, and cognitive impairment. NBNZH, which have similar receptor activation to that of BNZ, cause similar adverse effects and should not be used over 90 days (American Geriatrics Society 2015 Beers Criteria Update Expert Panel). These data highlight the challenge of managing psychiatric comorbidities such as anxiety and sleep disorders while considering the risk associated for both adverse outcomes such as falls and cognitive impairment as well as dependence and potential for abuse.

Even after controlling for clinical indicators, controlled medication use varied by several sociodemographic factors. Adults 85 years and above were less likely to take a controlled medication than adults age 65 to 74. This finding is similar to prior research that investigated the use of PIM within a home healthcare sample of approximately 3,100 adults. The likelihood of receiving a PIM decreased as older adults advanced in age, with adults 85 years or above least likely to receive a medication classified as a PIM (Bao et al., 2012). It may be that prescribers exercise more caution with much older patients in the use of controlled medications, which carry potential risks for cognitive impairment and falls. After controlling for age and clinical factors, female home healthcare patients were more likely than men to receive both opiates and benzodiazepines, a trend that parallels the general population (Centers for Disease Control and Prevention, 2013; Olfson et al., 2015; Steinman et al., 2015). This same gender difference has also been observed with PIM (Morgan et al., 2016) as well as psychotropic medications (Taggart et al., 1993). Differential prescribing patterns may be the result of various social forces related to gender that shape healthcare expectations and experiences (Morgan et al.).

Home healthcare patients referred from hospitals, SNFs, or Rehabilitation Centers were more likely to receive a prescription for a controlled medication than patients referred from the community. Falls, injuries, and acute illnesses are antecedents to hospitalization or rehabilitation and are correlated with pain symptoms. Although prescription opioids are often clinically indicated, the high prevalence among this population underscores the important role of home healthcare clinicians in follow-up and post-discharge care.

Similar to the findings of the Centers for Disease Control and Prevention, the likelihood of using controlled prescription drugs varied by region of the country (Centers for Disease Control and Prevention, 2014). In our sample, patients in Southern and Western regions had the greatest likelihood of receiving an opioid or NBNZH, although only a small number of agencies were located in the Western regions of the United States. It is unclear whether unobserved variables influence the disparities observed in various regions or if this reflects differences in prescribing practices. Regardless of location, home healthcare visits allow equal opportunities for psychoeducation regarding the risk of tolerance and misuse for these classes of medication.

As our findings suggest, home healthcare clinicians are an integral part of interdisciplinary efforts to improve outcomes for elderly adults entering home healthcare services. Inappropriate medication usage and complicated medication regimens are two important predictors of hospital readmission among home healthcare patients (Dierich et al., 2011). Furthermore, transitional care episodes are subject to high risk of medication discrepancies as classes of medication are commonly added, discontinued, or adjusted (Fitzgibbon et al., 2013). Medication reconciliation is a critical safety measure, ensuring that an up-to-date medication list is acquired among all patients transferring care. Exercising precision in reconciliation and documentation determines if classes of medication such as opioids, BNZ, and hypnotics should be continued. Additionally, clinicians providing care for patients in the home have ongoing opportunities to engage in conversation regarding changes in symptoms and assist patients in determining when these medications may no longer be needed. It also allows home healthcare clinicians

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to provide continued psychoeducation regarding the potential dangers and side effects of these high-risk medications while encouraging judicious and short-term usage, when possible.

There are several limitations of this study. First, this study did not compare dosage strength or short- versus long-acting opioids, BNZ, or NBNZH. Similarly, the indication for usage for each medication could not be determined by the available data. Finally, the analysis of prevalence of controlled drugs by geographical region was limited by the smaller number of patients in the west.

In spite of these limitations, this study is among the first to investigate the prevalence of opioids, BNZ, and NBNZH within a large sample of older adults at the start of Medicare home healthcare services. These findings have important implications for home care clinicians and healthcare policy and suggest that home healthcare is a point of engagement, where clinicians have unique opportunities to improve outcomes for recipients of home healthcare services.

Conclusion

In this large sample of older patients beginning Medicare home healthcare services, over 50% of patients had been prescribed a controlled medication. Controlling for clinical factors, rates of controlled medication use varied significantly by age, gender, referral source, and geographical region. The health status and comorbidities of the majority of older adults receiving home healthcare services highlight the challenge of treating symptoms such as pain, anxiety, and insomnia, while simultaneously considering the risk of adverse outcomes. Home healthcare clinicians are well positioned to engage in risk assessment, review and reconcile medication, oversee appropriate referrals, and offer psychoeducation regarding the potential for misuse and dependence. ♦

Brandi P. Cotton, PhD, MSN, APRN, is a Postdoctoral Research Fellow, Department of Psychiatry, Geisel School of Medicine at Dartmouth, Lebanon, New Hampshire.

Matthew C. Lohman, PhD, is a Postdoctoral Research Fellow, Department of Psychiatry, Geisel School of Medicine at Dartmouth, Lebanon, New Hampshire.

Jessica M. Brooks, PhD, is a Postdoctoral Research Fellow, Department of Psychiatry, Geisel School of Medicine at Dartmouth, Lebanon, New Hampshire.

Karen L. Whiteman, PhD, is a Postdoctoral Research Fellow, Department of Psychiatry, Geisel School of Medicine at Dartmouth, Lebanon, New Hampshire.

Yuhua Bao, PhD, is an Associate Professor, Department of Healthcare Policy and Research and Department of Psychiatry, Weill Cornell Medical College, New York, New York.

Rebecca L. Greenberg, MS, is a Clinical Database and Statistics Consultant, Self-Employed, Chappaqua, New York.

Martha L. Bruce, PhD, MPH, is a Professor, Department of Psychiatry, Geisel School of Medicine at Dartmouth, Lebanon, New Hampshire.

Address for correspondence: Brandi P. Cotton, PhD, MSN, APRN, Department of Psychiatry, Geisel School of Medicine at Dartmouth, 46 Centerra Parkway, Ste. 200, Lebanon, NH 03766 (brandi.p.cotton@dartmouth.edu).

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