High-risk medications among older adults in Washington, 2014-2019

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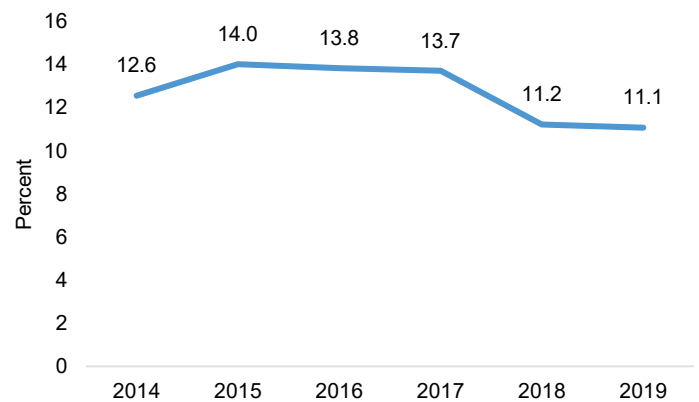
Background

Many medications are potentially inappropriate for older adults. Some may have side effects that are especially dangerous for seniors, such as increased fall risk or cardiovascular effects. Others may not be properly metabolized due to age-related changes in kidney function. The American Geriatric Society Beers Criteria (2015 update)[1] provides guidance for clinicians regarding potentially inappropriate medications that may cause harm in older adults. Based on these criteria, the Pharmacy Quality Alliance produced a High-Risk Medication performance measure that monitors how well a prescribers follow AGS guidelines. In this report, we examine HRM prescriptions among nonhospice adults age 65 and older in Washington, using pharmacy data from the Washington All-Payer Claims Database.

Results

Prevalence of High-Risk Medications appears to be decreasing since 2014. However, we need more years of data to say if this is the start of a sustained trend. Among Medicare Advantage members, age 65 or older, and with no hospice indicators, the percentage with prescriptions for HRM decreased from 13% in 2014 to 11% in 2019 (Figure 1, Appendix Table 1).

Figure 1: High-Risk Medications among Medicare Advantage Beneficiaries in Washington State, 2014-2019

Though Medicare Advantage plans provide pharmacy data in all years, at the time of analysis, Medicare part D prescription data were only available in WA-APCD for 2015, 2016 and 2017. The apparent increase in HRM percentage in those years may be due to more complete reporting of Medicare pharmacy claims.
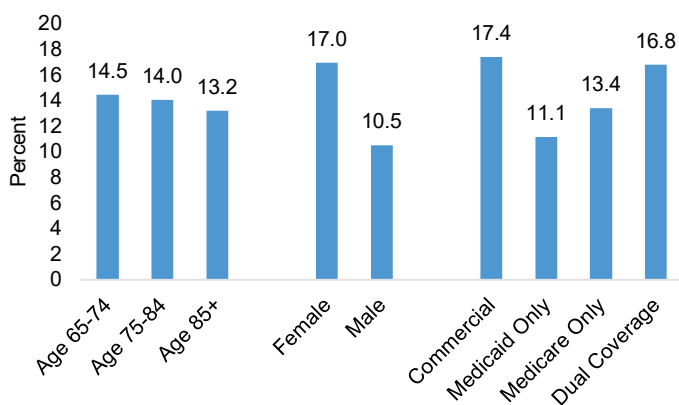
We give HRM results by age, sex, primary payer (Figure 2, Appendix Table 2), health conditions (Table 1,2), and medication class (Figure 3, Appendix Table 3) for older adults in 2017. These results include Medicare fee-for-service beneficiaries and Medicare Part D prescriptions. Females were more likely to be prescribed HRM (17.0%) than males (10.5%). Members with

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[1] American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults, JAGS 63:2227–2246, 2015.

commercial coverage had the highest HRM percentage (17.4%), followed by Medicare-Medicaid dual coverage (16.8%), Medicare only (13.4%) and Medicaid only (11.1%).

We assigned primary medical insurance as follows: Members with 12 months of commercial coverage were classified as

Figure 2. High Risk Medications among older Adults (Age 65+) by age, sex and primary medical insurer in Washington, 2017

commercial, regardless of other coverage. Members with 12 months of only Medicare coverage were classified as Medicare. Members with 12 months of only Medicaid coverage were

classified as Medicaid. We classified members with 12 months of both Medicaid and Medicare and no commercial coverage as dual. We did not assign a primary payer to other combinations of insurance coverage.

The AGS Beers Criteria identify medical conditions of the cardiovascular system, central nervous system, gastro-intestinal system, and kidneys and urinary tract for which HRM are of particular concern (Table 1, 2). In most cases, 2017 HRM prevalence was higher among members with at-risk medical conditions compared to the overall percentage, with the highest HRM prevalence among members with insomnia (women 31.8%, men 26.2%). For all health risk conditions, HRM prevalence was higher for women than men. For women, the most common risk condition was a history of falls or fracture (18.4%) followed by chronic kidney disease (13.7%), insomnia (12.0%) and heart failure (10.6%). For men, the most common risk condition was urinary symptoms due to benign prostate hyperplasia (19.6%), followed by chronic kidney disease (14.2%), history of falls or fracture (12.4%) and heart failure (12.3%).

Table 1: High-risk medications by health risk condition among nonhospice women, age 65+ in Washington, 2017 (N = 398,600)
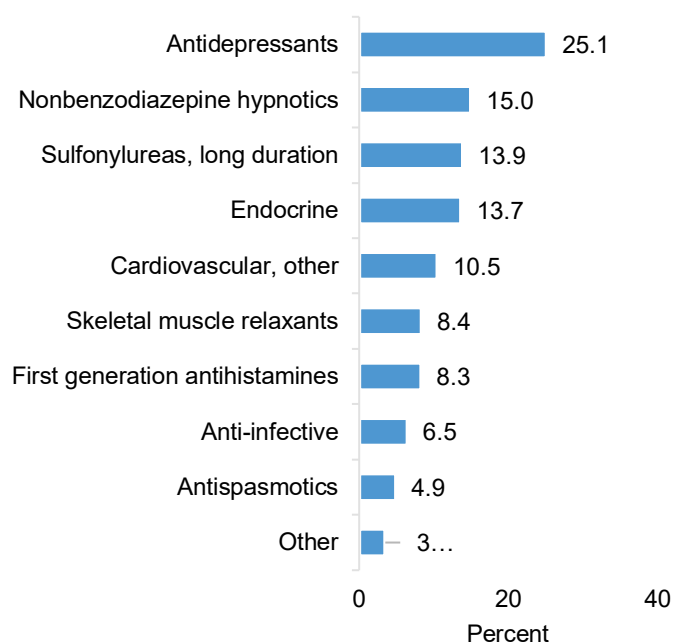
Health Risk Condition - International Classification of Diseases, 10th Edition (ICD-10) codes	Number with health condition	Number with HRM	Percent with health condition	Percent with HRM
Cardiovascular				
Heart failure - ICD10 I50	42,184	10,287	10.6	24.4
Syncope - ICD10 R55	27,619	5,928	6.9	21.5
Central Nervous System				
Chronic seizures or epilepsy - ICD10 G40	6,766	1,614	1.7	23.9
Delirium - F05, G31.0, G31.1, G31.83	5,898	1,246	1.5	21.1
Dementia or cognitive impairment F01, F02, F03	31,982	5,517	8.0	17.3
History of falls or fracture - ICD10 Z91.81, S02, S12, S92	73,324	15,074	18.4	20.6
Insomnia - ICD10 G47.0, F51.0	47,660	15,143	12.0	31.8
Parkinson's disease - ICD10 G20, G21	5,188	1,099	1.3	21.2
Gastrointestinal				
History of gastric or duodenal ulcers - ICD10 Z87.11	2,091	530	0.5	25.3
Kidney and urinary tract				
Chronic kidney disease, stage IV or less - ICD10 N18.1, N18.2, N18.3, N18.4	54,673	11,358	13.7	20.8
Urinary incontinence - all types (women) - ICD10 N39.3, N39.4	39,480	9,277	9.9	23.5
Lower urinary symptoms, benign prostate hyperplasia (Men) N40.1	--	--	--	--

Table 2: High-risk medications by health risk condition among nonhospice men, age 65+ in Washington, 2017 (N = 296,882)

Health Risk Condition - International Classification of Diseases, 10th Edition (ICD-10) codes	Number with health condition	Number with HRM	Percent with health condition	Percent with HRM
Cardiovascular				
Heart failure - ICD10 I50	36,301	6,639	12.3	18.3
Syncope - ICD10 R55	21,186	2,951	7.2	13.9
Central Nervous System				
Chronic seizures or epilepsy - ICD10 G40	5,358	788	1.8	14.7
Delirium - F05, G31.0, G31.1, G31.83	4,186	653	1.4	15.6
Dementia or cognitive impairment F01, F02, F03	17,341	2,268	5.9	13.1
History of falls or fracture - ICD10 Z91.81, S02, S12, S92	36,830	5,260	12.4	14.3
Insomnia - ICD10 G47.0, F51.0	24,603	6,443	8.3	26.2
Parkinson's disease - ICD10 G20, G21	6,379	951	2.2	14.9
Gastrointestinal				
History of gastric or duodenal ulcers - ICD10 Z87.11	1,302	188	0.4	14.4
Kidney and urinary tract				
Chronic kidney disease, stage IV or less - ICD10 N18.1, N18.2, N18.3, N18.4	42,070	6,354	14.2	15.1
Urinary incontinence - all types (women) - ICD10 N39.3, N39.4	--	--	--	--
Lower urinary symptoms, benign prostate hyperplasia (Men) N40.1	58,176	7,133	19.6	12.3

The Pharmacy Quality Alliance groups HRM into 17 broad categories (Figure 3, Appendix Table 3). Antidepressants were the most prescribed HRM. A quarter (25.1%) of members with one or more HRM were prescribed antidepressants. Other commonly prescribed HRM categories are non-benzodiazepine hypnotics (15.0%), long-duration sulfonylureas (13.9%), endocrine agents (13.7%) and cardiovascular agents (10.5%). Among members with HRM prescriptions, 12.1% had prescriptions in two or more distinct categories, and 1.5% had prescriptions in three or more.

Figure 3: High-risk medications prescribed to older adults in Washington, 2017

Conclusion

The AGS Beers criteria identify medications that are associated with adverse health outcomes in older adults, including confusion, falls and mortality. The Beers criteria are intended as a guide to clinicians. Being aware of potential risks, clinicians may consider other treatments, or seek to mitigate adverse effects in cases where the medication's benefit is deemed to outweigh the risks. The PQA high-risk

medication measure was designed to assess adherence to Beers criteria recommendations at a population level, to identify populations that may warrant special attention.

In Washington, women are substantially more likely than men to be prescribed HRM. The difference holds across all health conditions, and the average age in the study population for men (73 years) and women (74 years) are not substantially different. This suggests a possible gender bias in prescribing rather than differences in gender-specific health status.

HRM prescribing was higher among commercial-payer members than either Medicare or Medicaid. The average age of commercially insured members (71 years) was younger than other payers (Medicare: 74 years, Medicaid 74 years). The commercial population was healthier, with lower prevalence of health risk conditions. Yet, despite being younger and healthier, commercial-payer members were more likely to be prescribed HRM. The Center for Medicare and Medicaid Services monitors HRM prescribing among Medicare Part D providers and placed most HRM in a higher cost tier in the Medicare drug formulary. Many Medicare Part D plans actively encourage providers to avoid HRM and seek safer alternatives. Perhaps without similar incentives, commercial plans have been less responsive to AGS Beers Criteria guidelines regarding HRM.

HRM prescribing was also high among Medicare-Medicaid dual eligible members. Dual eligible members were slightly older (average age 75) and had a higher prevalence of health risk conditions. Prevalence of three conditions associated with long-term care – dementia (16%), fall or fracture (21%) and female urinary incontinence (20.3%) – were particularly high compared to the overall population (table 2). Medicare will pay for care in skilled nursing facilities only for the first 100 days. Medicaid is

the payer of last resort for Medicare patients who have exhausted both their Medicare benefits and their private assets. This is a highly vulnerable population, often lacking the agency to participate in health care decisions. It may be that for some long-term care residents, providers judge the benefits of HRM to outweigh the risks. It may also be that, with no one to advocate for the patients, providers simply disregard potential harms.

Appendix

Table 1. High-risk medications (HRM) among nonhospice adults, age 65+, in Washington state, 2014-2019.

Year	All adults age 65+			Medicare Advantage, age 65+		
	Number in study population	Number with HRM	Percent with HRM	Number in study population	Number with HRM	Percent with HRM
2014*	332,313	44,894	13.5	219,144	27,523	12.6
2015	621,369	92,055	14.8	337,313	47,319	14.0
2016	654,838	92,762	14.2	284,193	39,334	13.8
2017	696,283	98,968	14.2	386,802	53,045	13.7
2018*	401,777	48,370	12.0	274,401	30,787	11.2
2019*	449,070	51,340	11.4	320,636	35,530	11.1
*Note: Medicare Fee-For-Service data not available						

Table 2. High-risk medications (HRM) among nonhospice adults, age 65+, by age, sex, and primary medical coverage in Washington state, 2017.

Population	Number in study population	Number with HRM	Percent with HRM
Nonhospice, age 65+	694,866	98,851	14.2
Age 65-74	424,803	61,464	14.5
Age 75-84	196,825	27,651	14.0
Age 85+	74,655	9,853	13.2
Female	399,396	67,732	17.0
Male	296,882	31,235	10.5
Commercial	76,300	13,294	17.4
Medicaid	1,777	198	11.1
Medicare	534,676	71,716	13.4
Medicare-Medicaid Dual	61,346	10,309	16.8

Table 3. Categories of high-risk medications (HRM) prescribed – number and percent of members with prescription in specific categories among all members with HRM prescriptions in Washington state, 2017.

High Risk Medication Category	Number of members	Percent of members
Antidepressants	24,869	25.1
Non-benzodiazepine hypnotics	14,828	15.0
Sulfonylureas, long duration	13,764	13.9
Endocrine	13,514	13.7
Cardiovascular, other	10,386	10.5
Skeletal muscle relaxants	8,292	8.4
First generation antihistamines	8,244	8.3
Anti-infective	6,426	6.5
Antispasmotics	4,896	4.9
Barbituates	1,637	1.7
Non-cox-selective nsaids	819	0.8
Antiparkinson agents	635	0.6
Central alpha blockers	224	0.2
Antithrombotics	55	0.1
Pain medications	49	0.0
Central nervous system. Other	21	0.0
Vasodialators for dementia	< 10	--
Two or more	11,962	12.1
Three or more	1,505	1.5