

Template:

❓ Question:

What portion of older adults (65+) has been prescribed benzodiazepine or other sedative hypnotics for insomnia, agitation or delirium. (Relates to CWC Geriatrics recommendation #2)

❓ Team and list of all team member names:

UTOPIAN-CPCSSN:

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(all team members must have agreed to challenge rules through registration)

Describing the Data and Analysis

Population: Patients age 65 or more as of December 31st 2014 with a visit in last year of follow up, and at least 2 recorded visits.

Descriptive analytical methods were used to analyze data and present findings.

❓ Data Custodian Organization(s) and data sources:

Data custodians:

Physicians who have provided consent for participation in the CPCSSN-UTOPIAN project (UTOPIAN is the University of Toronto Practice Base Research Network that is participating in the national CPCSSN project)

Data sources:

EMR based Data from the UTOPIAN-CPCSSN database, up to December 31st 2014. Data were extracted from multiple EMR applications, then were cleaned, coded, and standardized to conform with the national CPCSSN database

❓ List of Datasets Used (e.g. names of database and/or data origins):

Data extracted as of December 31st 2014 from over 30 practice locations (173 physicians, ~ 260K patients) across the Greater Toronto Area. Data were obtained from local or ASP versions of four

different EMR applications: Practice Solutions EMR (ASP-Telus); Practice Solutions EMR (Local-Telus); Nightingale EMR (ASP); Nightingale EMR (local database), OSCAR (Local), Bell EMR (ASP)

☒ Exclusions:

Patient under age 65 as of December 31st 2014

Patients with less than two visits in total or no visit between December 31st 2013 and December 31st 2014

☒ Nature and Size of Cohort (e.g. geographic area covered, number of patients included):

We used the latest available UTOPIAN-CPCSSN database (2014Q4) to generate a cohort of patients age 65 or more as of December 31st 2014, who were considered to have been “active” (having care managed by their family physician) in the past year. Active/inactive indicators in EMR charts may not be updated regularly and rostered status was not available in the CPCSSN database; to identify active patients, we limited our sample to patients with at least two recorded visits, at least one of which was in 2014. Most patients were located in Greater Toronto Area. The total patient population (including all ages) was 259,808 patients. After applying the exclusion criteria, **32,164** patients were retained as final cohort.

☒ Data timeframe:

January 1st 2014 to December 31st 2014.

Please provide a brief summary of the analysis methodology:

Numerators and denominators were extracted using SQL queries. Age was calculated as of December 31st 2014, and patients with age <65 were excluded. The CPCSSN encounter table was used to exclude patients with less than 2 encounters in 2014.

Following the usual CPCSSN data processing, medications extracted from the EMRs to CPCSSN-UTOPIAN database were mapped to WHO-ATC codes. We searched for all patients with a recorded medication ATC codestarting with N05C* (HYPNOTICS AND SEDATIVES) or N05BA (Benzodiazepine derivative), prescribed in 2014. We then restricted these to prescriptions dated in 2014. Percentages were obtained by dividing numerator by denominator and multiplying by 100. We further analyzed data by age range, sex and subgroups of hypnotic and sedative medications using ATC codes to identify the percentage of cohort on each subgroup including benzodiazepines. These subgroups are listed below:

N05CA Barbiturates, plain; N05CB Barbiturates, combinations; N05CC Aldehydes and derivatives; N05CD Benzodiazepine derivatives; N05CE Piperidinedione derivatives; N05CF Benzodiazepine related drugs; N05CH Melatonin receptor agonists; N05CM Other hypnotics and sedatives; N05CX Hypnotics and sedatives in combination, excl. barbiturates; N05BA Benzodiazepine derivatives.

Describing the Findings

☒ Numerator and Denominator (as specified in the question definition)

Denominator: All patients with at least 2 visits in the CPCSSN-UTOPIAN database encounter table, and with at least one visit in 2014, and age 65 or more as of December 31st 2014.

Numerator: Patients in denominator who had at least one recorded medication for HYPNOTICS AND SEDATIVES (any WHO-ATC code starting with N05C) or benzodiazepine derivative (WHO-ATC N05BA) in 2014

Of **32,164** patients included in the cohort, **3,919** (12.2%) have at least one recorded sedative-hypnotic medication prescription in their electronic charts at any time in the past. The total number of sedative-hypnotic medications prescribed was **20,652**. When we limited medication prescriptions to those prescribed in 2014, the number of medication prescriptions was **4,102**, and the number of cohort patients with at least one prescribed sedative-hypnotics in 2014 was **2,052** (6.4%).

☒ Please also provide a brief summary of the findings including any key limitations or interpretation issues (may also include one figure/table)

The mean age for the study cohort was 75.5 (SD 8.1), and 60% of them were female.

The mean age for patients with at least one sedative-hypnotic prescription in 2014 was 75.3 (SD 7.9) and 68.6% of them were female.

Table 1 presents the study cohort grouped by age, sex, and sedative-hypnotic medication prescription in the last year of follow up. 5.1% of patients have received a prescription for at least one benzodiazepine related drugs (zopiclone, zolpidem, zaleplon, or eszopiclone) in the past year, 1.1% have received a benzodiazepine derivatives (flurazepam, triazolam, temazepam..etc). The proportion of patients receiving a prescription for a benzodiazepine related drugs is slightly higher in younger age groups in both sexes. 0.2% of patients have received both types of medications in the last year of follow up.

Limitations of this study is the possibility of incomplete EMR medication records, and errors in ATC coding. A validation study to ascertain completeness of EMR medication records related to benzodiazepine and hypnotic drugs and validation of ATC coding could help improve the reliability of these results.

Table 1

Table 1: Age Group * Drug_Group * Sex Crosstabulation

				Drug_Group				Total	
				No sedative-hypnotic drug	Benzodiazepine derivatives (N05CD)	Benzodiazepine related drugs (N05CF)	Both (N05CF and N05CD)		
Female	Age Group	65-70	Count	6259	56	467	6	6788	
			% within Age Group	92.2%	0.8%	6.9%	0.1%	100.0%	
		71-80	Count	6713	111	394	18	7236	
			% within Age Group	92.8%	1.5%	5.4%	0.2%	100.0%	
		81-90	Count	4064	68	213	10	4355	
			% within Age Group	93.3%	1.6%	4.9%	0.2%	100.0%	
		>90	Count	1100	15	40	1	1156	
			% within Age Group	95.2%	1.3%	3.5%	0.1%	100.0%	
		Total	Count	18136	250	1114	35	19535	
			% within Age Group	92.8%	1.3%	5.7%	0.2%	100.0%	
	Male	Age Group	65-70	Count	4277	25	170	1	4473
				% within Age Group	95.6%	0.6%	3.8%	0.0%	100.0%
			71-80	Count	4580	37	210	6	4833
				% within Age Group	94.8%	0.8%	4.3%	0.1%	100.0%
		81-90	Count	2612	29	114	7	2762	
			% within Age Group	94.6%	1.0%	4.1%	0.3%	100.0%	
		>90	Count	525	9	25	1	560	
			% within Age Group	93.8%	1.6%	4.5%	0.2%	100.0%	
		Total	Count	11994	100	519	15	12628	
			% within Age Group	95.0%	0.8%	4.1%	0.1%	100.0%	
Total	Age Group	65-70	Count	10536	81	637	7	11261	
			% within Age Group	93.6%	0.7%	5.7%	0.1%	100.0%	
		71-80	Count	11293	148	604	24	12069	
			% within Age Group	93.6%	1.2%	5.0%	0.2%	100.0%	
		81-90	Count	6676	97	327	17	7117	
			% within Age Group	93.8%	1.4%	4.6%	0.2%	100.0%	
		>90	Count	1625	24	65	2	1716	
			% within Age Group	94.7%	1.4%	3.8%	0.1%	100.0%	
		Total	Count	30130	350	1633	50	32163	
			% within Age Group	93.7%	1.1%	5.1%	0.2%	100.0%	