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Supplemental Table 1: List of classes and medications.

Class	Medications
Short-acting benzodiazepines	Alprazolam, estazolam, lorazepam, midazolam, oxazepam, temazepam, and triazolam
Long-acting benzodiazepines	chlordiazepoxide, clobazam, clonazepam, clorazepate, diazepam, flurazepam
Opioids	alfentanil, buprenorphine, butorphanol, codeine, dihydrocodeine, fentanyl, hydrocodone, hydromorphone, meperidine, methadone, morphine, nalbuphine, nucynta, oxycodone, oxymorphone, pentazocine, propoxyphene, remifentanil, sufentanil, tapentadol, talwin, tramadol, carfentanil, pethidine, and etorphine
Antidepressants	citalopram, escitalopram, fluoxetine, fluvozamine, paroxetine, sertraline; desvenlafaxine, duloxetine, levomilnacipran, milnacipran, venlafaxine; vilazodone, vortioxetine; nefazodone, trazodone; atomoxetine, reboxetine, teniloxazine, viloxazine; bupropion; amitriptyline, amitriptyline, clomipramine, desipramine, dibenzepin, dimetacrine, dosulepin, doxepin, imipramine, lofepramine, melitracen, nitroxazepine, nortriptyline, noxiptiline, opipramol, pipofezine, protriptyline, trimipramine; amoxapine, maprotiline, mianserin, mirtazapine, setiptiline; isocarboxazid, phenelzine, tranylcpromine, selegiline, metralindole, moclobemide, pirlindole, toloxatone, and bifemelane
Neuropathic pain medications	nortriptyline, desipramine, amitriptyline, clomipramine, imipramine, duloxetine, venlafaxine, gabapentin, enacarbil, lidocaine, capsaicin, tramadol, morphine, oxycodone, and botulinum

Benzodiazepine doses were converted to a standard dose to calculate LME, lorazepam milligram equivalent: 0.5 for alprazolam, 10 for chlordiazepoxide, 0.25 for clonazepam, 5 for diazepam, 1 for lorazepam, 15 for oxazepam, and 10 for temazepam.

Supplemental Table 2: Association between benzodiazepines and mortality in patients initiating hemodialysis (n=69,368) between 2013-2014 stratified by age, sex, race, and opioid co-dispensing. Use of benzodiazepines and other medications were treated as time-varying and all models were adjusted. The results below are from three separate models; all models were adjusted for age, sex, race, prescription (antidepressant & CNS depressants), and comorbidities. CNS depressants included sedatives, muscle relaxants, and antipsychotics. Comorbidities included diabetes mellitus, cardiovascular disease, peripheral vascular disease, hypertension, COPD, smoking history, cancer, drug abuse, inability to ambulate, institutionalized, and obesity. In the short-acting benzodiazepine model, those taking long-acting benzodiazepines were treated as unexposed. Similarly, in the long-acting benzodiazepine model, those taking short-acting were treated as unexposed. LME, lorazepam milligram equivalent

Stratification factor	Number of deaths	Any aHR (95% CI)	Short-acting aHR (95% CI)	Long-acting aHR (95% CI)
Age				
18-64	4,541	1.31 (1.16-1.48)	1.43 (1.25-1.63)	0.96 (0.75-1.24)
65+	12,440	1.31 (1.21-1.42)	1.46 (1.34-1.58)	0.77 (0.62-0.95)
P for interaction		0.98	0.77	0.19
Sex				
Men	9,149	1.48 (1.35-1.62)	1.62 (1.47-1.79)	0.99 (0.79-1.24)
Women	7,832	1.17 (1.07-1.28)	1.31 (1.18-1.44)	0.72 (0.57-0.91)
P for interaction		0.002	0.006	0.06
Race				
Nonwhite	4,193	1.41 (1.20-1.66)	1.45 (1.21-1.73)	1.19 (0.84-1.70)
White	12,788	1.29 (1.20-1.39)	1.45 (1.34-1.57)	0.78 (0.65-0.94)
P for interaction		0.32	0.98	0.04
Opioids				
No	5,634	1.22 (1.13-1.32)	1.34 (1.23-1.45)	0.83 (0.69-1.00)
Yes	11,347	1.66 (1.46-1.90)	1.90 (1.65-2.18)	0.89 (0.64-1.24)
P for interaction		0.001	<0.001	0.72

Supplemental Figure 1: Illustration of time-varying exposure to benzodiazepine or opioid claims for one person. Several sensitivity analyses were performed wherein person-day exposure was extended to +7 days, +14 days, and +28 days beyond the outlined periods above.

