

Austin Porter, DrPH, MPH; Allen M. Smith, PharmD; Srinivasa B. Gokarakonda, MD, MPH; Michael P. Wilson, MD, PhD; and Bradley C. Martin, PharmD, PhD

University of Arkansas for Medical Sciences, 4301 W. Markham St., Little Rock, AR, 72205, USA

## BACKGROUND

Mental health disorders, such as depression, substance use disorders, and schizophrenia are established risk factors for suicide.<sup>1</sup> There is established literature to indicate that adherence to these psychotherapeutics are associated with a reduction in the long-term risk of suicide.<sup>3</sup> However, the impact of discontinuing or running out of these medications as a potential trigger for suicide has not been thoroughly investigated. A “trigger” is an acute event or transient encounter that leads to a final outcome or disease. One approach to investigating triggers is to compare exposure to a trigger during a designated “hazard window,” occurring immediately prior to the outcome event to a series of “control windows,” which are windows of time preceding the hazard window

Using insurance claims data linked to death certificates from 2013-2021, this study investigated the immediate connection between depleting at least one mental health-related medication and suicide.

## METHODS

### Data Source

- Arkansas All-Payers Claims Database (AR-APCD)
  - Medical and pharmacy claims
- Death certificates

### Study Subjects

- All decedents of suicide identified from the death certificate who had:
  - ≥ 1 psychotherapeutic prescription filled** during study window (12 weeks before death)
  - Continuous representation in AR-APCD 12 weeks** prior to death

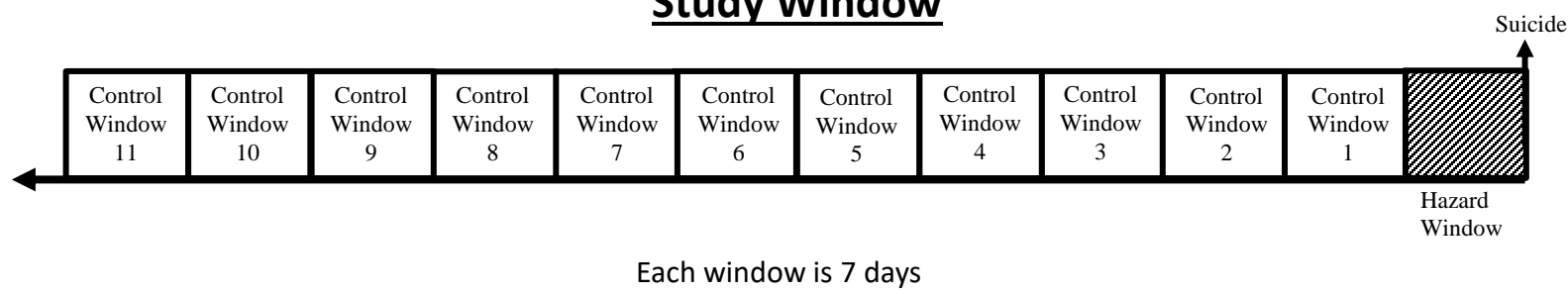
### Psychotherapeutic Drug Definitions

- Categorized using National Drug Codes (NDC)
  - First Data Bank® ontology scheme
- Psychotherapeutics drugs:** Antidepressants, anxiolytics, anti-psychotics

### Case-crossover Design

- Hazard window: week before death by suicide
- Control windows: 11-week long periods preceding hazard window

#### Study Window



### Main Exposure Measure: Suicide “Trigger”

- Depleting at least one psychotherapeutic during study window**
  - Identified as a gap between run-out dates (prescription fill date + days supplied) and prescription fill dates of ensuing prescriptions accounting for early refills

### Time Varying Covariates:

- Medical claims** used to categorize healthcare utilization before suicide
  - Mental health-related:** 290-319 (ICD-9-CM) or F01-F99 (ICD-10-CM)
  - Non-mental health-related:** all other ICD-9-CM or ICD-10-CM codes
- Facility codes used to determine location of treatment as **inpatient or outpatient**
- Four categories of healthcare utilization:** (i) Inpatient mental health-related, (ii) Outpatient mental health-related, (iii) Inpatient non-mental health-related, and (iv) Outpatient non-mental health-related
- Time invariant covariates (i.e. gender, comorbidities) were not considered because the case-crossover design controls for time invariant confounding

### Analysis

- Conditional logistic regression analysis:** healthcare utilization included in model
- Sensitivity analysis conducted by changing study windows from 7 days to 3 days

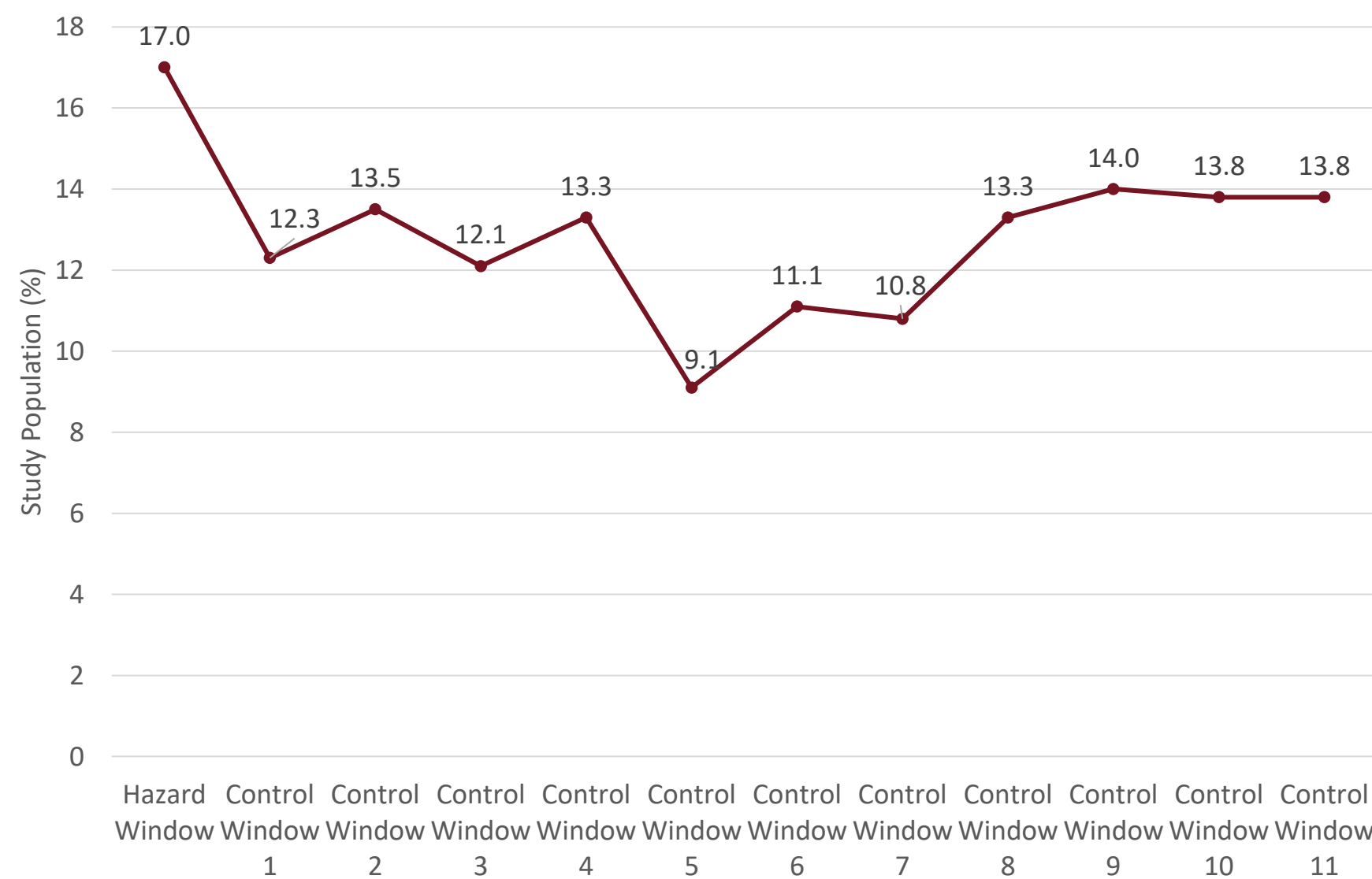
## RESULTS

A total of 853 decedents met the inclusion criteria for this study had a total of 4,375 prescriptions for psychotherapeutic medications to treat mental health conditions during the study windows

### Decedent Demographics, Insurance Coverage and Health Care Contacts

VARIABLE	TOTAL POPULATION (N=853)	EXHAUSTED ANY MEDS DURING HAZARD WINDOW (N=145)	DID NOT EXHAUST ANY MEDS DURING HAZARD WINDOW (N=708)	P-VALUE
AGE IN YEARS, MEAN (STD. DEV.)	51.2 (17.2)	50.0 (17.5)	51.5 (17.2)	0.36
AGE GROUP, N(%)				
0-17	23 (2.7%)	<10	>10	0.24
18-44	275 (32.2%)	46 (31.7%)	229 (32.3%)	0.88
45-64	344 (40.3%)	57 (39.3%)	287 (40.5%)	0.78
65+	211 (24.7%)	36 (24.8%)	175 (24.7%)	0.98
MALE, N(%)	549 (64.4%)	88 (60.7%)	461 (65.1%)	0.31
RACE, N(%)				
BLACK	29 (3.4%)	<10	>10	0.14
WHITE	815 (95.6%)	140 (96.6%)	675 (95.3%)	0.66
OTHER	<10	<10	<10	0.07
MISSING	<10	0 (0.0%)	<10	-
MARITAL STATUS				
DIVORCED	260 (30.5%)	46 (31.7%)	214 (30.2%)	0.69
MARRIED	312 (36.6%)	60 (41.4%)	252 (35.6%)	0.17
SINGLE	195 (22.9%)	29 (20.0%)	166 (23.5%)	0.38
WIDOWED	78 (9.1%)	<10	>10	0.10
MISSING	<10	<10	<10	-
MECHANISM, N(%)				
FIREARM	481 (56.4%)	72 (49.7%)	409 (57.8%)	0.07
POISONING	193 (22.6%)	40 (27.6%)	153 (21.6%)	0.12
SUFFOCATION	128 (15.0%)	27 (18.6%)	101 (14.3%)	0.18
OTHER	51 (6.0%)	<10	>10	0.30
INSURANCE TYPE				
MEDICAID	167 (19.6%)	29 (20.0%)	138 (19.5%)	0.88
MEDICARE/MEDICARE ADVANTAGE	472 (55.3%)	73 (50.3%)	399 (56.4%)	0.18
PRIVATE/COMMERCIAL	178 (20.9%)	38 (26.2%)	140 (19.8%)	0.08
OTHER	36 (4.2%)	<10	>10	0.61
HEALTHCARE CONTACTS IN HAZARD WINDOW				
ANY CONTACT	316 (37.1%)	58 (40.0%)	258 (36.4%)	0.42
MENTAL HEALTH CLAIM FILED	128 (15.0%)	25 (17.2%)	103 (14.6%)	0.41
NO MENTAL HEALTH CLAIM FILED	260 (30.5%)	44 (30.3%)	216 (30.5%)	0.97

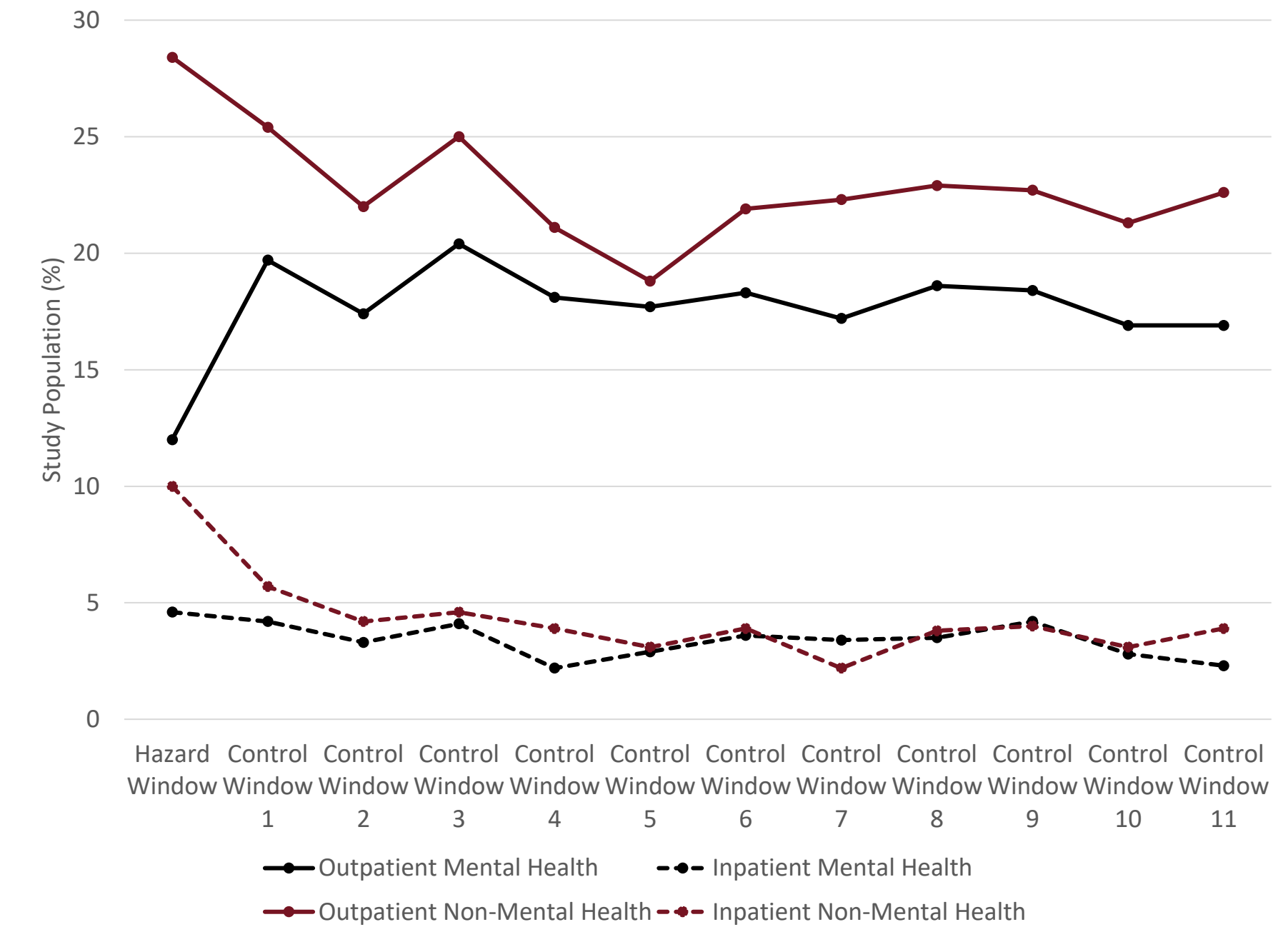
### Proportion of Study Population that Exhausted At Least One Mental Health-Related Medication, By Time Window



### Conditional Logistic Regression Results Examining the Influence of Exhausting Psychotherapeutic Medications

VARIABLE	AOR (95% CI)	P-VALUE
PSYCHOTHERAPEUTIC DRUGS		
EXHAUSTED ANY MEDICATION	1.46 (1.20, 1.77)	0.0001
OUTPATIENT MENTAL HEALTH	0.43 (0.33, 0.55)	<0.0001
OUTPATIENT NON-MENTAL HEALTH	1.38 (1.13, 1.67)	0.001
INPATIENT MENTAL HEALTH	1.38 (0.94, 2.03)	0.10
INPATIENT NON-MENTAL HEALTH	3.48 (2.56, 4.72)	<0.0001
SUBSET OF PSYCHOTHERAPEUTIC DRUGS		
EXHAUSTED ANY ANTIDEPRESSANT	1.31 (1.03, 1.66)	0.03
EXHAUSTED ANY ANXIOLYTIC	1.56 (1.10, 2.22)	0.01
EXHAUSTED ANY ANTI-PSYCHOTIC	1.17 (0.77, 1.80)	0.46
OUTPATIENT MENTAL HEALTH	0.43 (0.33, 0.55)	<0.0001
OUTPATIENT NON-MENTAL HEALTH	1.38 (1.13, 1.67)	0.001
INPATIENT MENTAL HEALTH	1.36 (0.93, 2.01)	0.12
INPATIENT NON-MENTAL HEALTH	3.48 (2.56, 4.72)	<0.0001

### Proportion of Study Population with a Medical Claim from Any Provider, By Time Window and Claim Type



## FINDINGS AND CONCLUSION

- ✓ There is a strong temporal relationship between exhausting psychotherapeutic medications and fatal suicide.
- ✓ There was a 46% increase in the odds of exhausting at least one psychotherapeutic during the hazard window compared to the control windows (p=0.0001)
- ✓ There was a 57% decrease in the odds of an outpatient mental health-related encounter during the hazard window compared to the control windows (p<0.0001)
  - ✓ Increased odds of both inpatient and outpatient non-mental-related encounter during hazard window
  - ✓ Among subset of psychotherapeutics, exhausting anxiolytics had the greatest effect
- ✓ Patients who are treated with psychotherapeutic medications must be followed closely to ensure adequate supply of their psychotherapeutic medications

## References

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