

# CAUSES OF EXCESS MORTALITY IN VETERANS TREATED FOR POSTTRAUMATIC STRESS DISORDER

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# What is PTSD?

Posttraumatic stress disorder (PTSD) is a condition that develops after exposure to a traumatic event.

# POLL QUESTION #1

Do you know someone with PTSD?

- Yes
- No

## POLL QUESTION #2

Roughly how many Americans do you think experience PTSD?

- 1-3%
- 4-6%
- 7-9%
- 10-12%

## POLL QUESTION #3

What are common symptoms of PTSD?

Select all that apply.

- intrusive re-experiencing of trauma
- avoidance of trauma-related stimuli
- negative alterations in cognition/mood
- changes in arousal and reactivity

# POLL QUESTION #4

What are common challenges for those living with PTSD? Select all that apply.

- symptom-related distress
- functional impairment
- decreased quality of life

# POLL QUESTION #5

What are common medical conditions associated with PTSD? Select all that apply.

- cardiovascular disorders
- neoplastic disorders
- metabolic disorders
- autoimmune disorders

# POLL QUESTION #6

Do you think Veterans with PTSD are at greater risk of dying than the general population?

- Yes
- No

# LITERATURE SEARCH

What has been reported?

PTSD is associated with increased mortality

What remains unclear?

causes of death among Veterans with PTSD

Why is this significant?

inform preventive interventions

# EVALUATING MORTALITY IN PTSD

## Previous Studies

- non treatment-seeking Vietnam Veterans
- no age stratification
- no comparison with general population

# EVALUATING MORTALITY IN PTSD

## This Study

- treatment-seeking all era Veterans
- age stratification
- comparison with U.S. general population

# OBJECTIVES

1. document the **mortality** for Veterans engaging in PTSD treatment compared with the U.S. population

# OBJECTIVES

2. determine the specific causes of death contributing to this mortality

# STUDY POPULATION

## Corporate Data Warehouse

- VA users with new PTSD treatment episodes between FY 2008-2013
- demographic, encounter, diagnostic data

# STUDY POPULATION

## Inclusion Criteria

- ✓ primary PTSD diagnosis at  $\geq 2$  outpatient visits
- ✓ one diagnosis in mental health setting
- ✓ over 90 days

# OUTCOME MEASURES

## Patient Characteristics

- demographics
- comorbidities
- military service

# OUTCOME MEASURES

## Healthcare Utilization

- primary care
- outpatient general mental health, outpatient specialized PTSD, outpatient substance abuse
- residential PTSD,
- residential substance abuse
- inpatient mental health

# PRIMARY OUTCOME

mortality within 1 year of index PTSD diagnosis

VA Vital Status File → vital status

VA-DoD Suicide Data Repository → cause of death

ICD-10 → classify cause of death

# COMPARISON WITH U.S. POPULATION

## CDC WONDER

- mortality rates for 2014 U.S. population
- classified by sex
- classified by age (18-34, 34-64,  $\geq 65$ )
- used reference rates to calculate SMRs

# STATISTICAL ANALYSES

## Observed Mortality

- counted deaths for all causes for Veterans in first year of PTSD treatment (FY 2008-2013)
- stratified leading causes of death by age

# STATISTICAL ANALYSES

## Observed v Expected Mortality

- calculated age- and sex- adjusted SMRs for top 10 leading causes of death

# RESULTS: COHORT CHARACTERISTICS

## Table 1: Profile of VA Users

491,040 Veterans met inclusion criteria

- 90% male
- 63% white
- 60% middle-aged
- >90% utilized outpatient mental health

# RESULTS: COHORT CHARACTERISTICS

## Table 1: Profile of VA Users

491,040 Veterans met inclusion criteria

- 65% pain disorder, 60% depression
- 13.4% TBI or other cognitive disorders
- 1/3 OEF/OIF/OND Veterans

# RESULTS: OBSERVED MORTALITY

## Table 2: Causes of Death Among VA Users

5,215 Veterans died during first year of treatment

Most common causes overall:

- heart disease
- malignancy
- accidents

# RESULTS: OBSERVED MORTALITY

## Table 2: Causes of Death Among VA Users

5,215 Veterans died during first year of treatment

Most common causes by age:

Young → accidents, suicide

Middle-Aged → heart disease, malignancy

Older → heart disease, malignancy

# RESULTS: OBSERVED MORTALITY

## Table 3: Unintentional Injury Deaths

622 Veterans died of unintentional injury

Most common injury deaths overall:

- poisoning
- motor vehicle traffic
- falls

# RESULTS: OBSERVED MORTALITY

## Table 3: Unintentional Injury Deaths

622 Veterans died of unintentional injury

Most common injury deaths by age:

Young → poisoning, motor vehicle traffic

Middle-Aged → poisoning, motor vehicle traffic

Older → falls, motor vehicle traffic

# RESULTS: OBSERVED V EXPECTED

**Table 4:** Compared With U.S. Population

All-Cause **SMR 1.05\*\*\*** (1.02, 1.08)

# RESULTS: OBSERVED V EXPECTED

## Table 4: Compared With U.S. Population

Suicide **SMR 2.52\*\*\*** (2.24, 2.82)

Unintentional Injury **SMR 1.99\*\*\*** (1.83, 2.16)

Viral Hepatitis **SMR 2.26\*\*\*** (1.68, 2.93)

# RESULTS: OBSERVED V EXPECTED

## Table 4: Compared With U.S. Population

Diabetes Mellitus **SMR 1.29\*\*\*** (1.11, 1.49)

Chronic Liver Disease **SMR 1.34\*\*** (1.11, 1.59)

# DISCUSSION

Compared with the U.S. general population,  
Veterans engaging in PTSD treatment have a...

- 5% excess mortality risk
- twofold elevated risk of death from  
suicide, accidents, and viral hepatitis

# DISCUSSION

During the first year of VA PTSD treatment...

- young Veterans died from  
accidents and suicide
- middle-aged and older veterans died from  
heart disease and malignant neoplasms

# POLL QUESTION #7

Do you find these results surprising?

- Yes
- No

# DISCUSSION

Does this study support prior literature?

- ✓ excess mortality
- ✓ elevated risk of death by suicide
- ✓ association with metabolic disorders

# DISCUSSION

Does this study add to the literature?

- ✓ elevated risk of death by unintentional injury
- ✓ elevated risk of death by viral hepatitis
- ✓ elevated poisoning among young Veterans

# LIMITATIONS

## Sample Selection

- no adjustment for confounders
- no patient-level treatment characteristics
- generalizability to non-Veterans with  
PTSD

# LIMITATIONS

## Results

- no military service stratification
- apply to first year after PTSD diagnosis
- SMRs underestimate difference between observed and expected deaths

# CONCLUSIONS

## Preventive Medicine

- ❖ screening measures
- ❖ target comorbidities to prevent suicide and accidental poisoning

# CONCLUSIONS

## Preventive Medicine

- ❖ lifestyle education to prevent diabetes, chronic liver disease, viral hepatitis
- ❖ continuity of care

# CONCLUSIONS

## Future Research

- ❖ develop interventions to address common risk factors

# POLL QUESTION #8

Do you think PTSD treatment protects Veterans with PTSD from premature death?

- Yes
- No

# FUTURE DIRECTION

Does evidence-based PTSD care impact mortality in this patient population?

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Q & A